SOCIOECONOMIC ASPECTS OF COASTAL RESOURCE USE IN TALISE, NORTH SULAWESI

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EXECUTIVE SUMMARY

The objectives of this baseline assessment are several. First, it is to provide information useful for determining impacts of project interventions at a later point in time either near or at the end of the project, or at some point in time after the project terminates. Secondly, the assessment is useful to help identify issues of concern that a coastal resources management program, in consultation with the community, may wish to address. Lastly, it provides a more detailed understanding of the socioeconomic, political and cultural characteristics of the community that need to be considered in planning and implementing project interventions.

The baseline presented here provides information that can be used to monitor and evaluate project impacts. Socioeconomic data was collected over a period of two weeks in August of 1997 by a team of Indonesian researchers using key informants, direct observation, secondary data and survey methods. A baseline environmental survey was conducted in the weeks following the socioeconomic survey (Kusen, *et al.,* 1999), and a forestry technical study was undertaken in 1998 (Lee, 1999). Sample size for the survey questionnaire was determined using power analysis (Cohen, 1988) and included household surveys from all three sub-villages (dusuns) of Talise village. The collection and analysis of information identified issues that were not recognized during the initial rapid assessment (Pollnac, *et al*., 1997a). A summary of the issues identified through the initial rapid assessment and this subsequent detailed baseline assessment are summarized below.

Conflicts and Impacts of the Pearl Farm

The pearl farm in Talise represents a substantial international investment and export industry that employs a large number of Talise residents. It also serves as an outlet for selling fish caught by local fishers. These advantages, however, must be weighted against the negative impression of the operation held by a large percentage of the community, particularly in Dusun 3. This negative perception has been brought on by the loss of traditional fishing grounds by local fishers who are now excluded from fishing in both the pearl culture areas and a buffer strip surrounding the areas. This has been compounded by the reportedly harsh treatment inflicted by pearl farm security personnel on individuals caught fishing within or near the pearl culture areas.

Deforestation and Loss of Wildlife

The upper hillsides of Talise Island are forested and provide many products for residents of the villages of Talise and Aerbanua. Forest uses include but are not limited to: providing wood products for housing, furniture and boats, and for sale to individuals outside of Talise; locations for small farming plots; hunting of wildlife for meat and sale to individuals outside of Talise; and a healthy watershed feeding springs and groundwater thus contributing to the supply of drinking water. Deforestation of the small remaining forest on the island is occurring at an alarming rate (56 percent loss in the last four years). Deforestation increases sedimentation on the fringing coral reef areas, particularly during heavy rainfall events. In addition, sustainable wildlife populations including deer, black macaque monkeys, and others, are threatened with extirpation from the island due to hunting and loss of forest habitat.

Land Tenure

Very little of the land in Talise village is owned by the villagers. Most of the land, including the forest area, farming plots and settlements, are classified as government land. A large portion of the land is leased as coconut plantation, but for many of the farming plots and housing areas, residents are essentially squatters on government land. These land tenure issues were used by the Communist Party of Indonesia (PKI) to gain support among residents in the 1960s and remain an unresolved concern of many of the island residents today.

Coastal Erosion, Flooding and Sand Mining

Coastal erosion, as reported by local residents, is occurring on all sides of Kinabohutan Island, and just north of the old jetty, by the cemetery in Dusun 1. Residents of Kinabohutan Island (Dusun 3) have also reported periodic flooding of many areas within the settlement area. Offshore sand mining (offshore from Kinabohutan Island) has taken place in the past for use at a hotel construction site south of Manado. Sand is also mined from the beaches of Talise Island by the pearl farm for use in sandbag anchors for the pearl culture suspension systems. There is concern that these sand mining activities may be exacerbating erosion problems.

Inadequate Drinking Water Supply and Infrastructure

The drinking water system in Dusun 1, which has tapped several springs for drinking water, washing and bathing purposes, is in disrepair. During the dry season and in times of drought, these springs also supply fresh drinking water to residents from other dusuns and villages in the area. While the springs continued to flow during the 1997 El Nino event, water flow diminished considerably. Deforestation of the watershed above these springs threatens their year-round ability to supply water to the settlement. In Dusun 3 on Kinabohutan Island, only 2 wells, which tap a very shallow lens of freshwater, can be used for drinking water supply. Contamination of the groundwater supply has lead to outbreaks of severe diarrhea, which in 1997 resulted in several deaths.

Sanitation and Solid Waste Disposal

Less than one-third of the households in Talise have septic systems. Coral is typically mined for use in septic system construction. On Kinabohutan Island, the northern beach behind the village, which faces a mangrove fringe, is used as a popular defecation site by the populace. Household solid waste is burned, buried, or discarded on the beach. The beaches contain a large amount of trash, particularly non-biodegradable products such as plastics.

Use of Potentially Unsustainable Fishing Methods

The small mesh sizes of gill nets and seines used by the fishers of Talise take all sizes of fish, large and small. This practice will increase the speed by which the fish stocks will be depleted by capturing fish before they mature and reproduce. As fishing pressure increases with a growing population and growing markets in Likupang and Manado, this will become an increasingly important problem which will need to be addressed. Residents have reported that sea cucumbers are no longer harvested due to declining stocks, and the sizes of reef fishes caught, such as groupers and red snappers, are already shrinking. Some methods of fishing can cause harm to coral reefs. Fortunately, common methods such as bomb fishing and use of

cyanide for fishing are not widely practiced in Talise. However, other fishing techniques used in Talise, such as *paka-paka* and some varieties of seines, where nets are potentially dragged over the reef or the reef is struck to frighten fish into the net, can be destructive. Ornamental fish traps newly introduced to Talise are often covered with pieces of coral broken off from the reef. Damage can also result when the trap is set on the reef and pulled up.

Overexploitation of Mangroves

Mangroves are being cut for local use for fuelwood and construction purposes. Mangroves used to ring almost the entire island of Kinabohutan. There is a concern that loss of mangroves may be accelerating or increasing the rate of erosion around the island. Past attempts at replanting and natural reseeding have failed as goats venture out onto the reef flats during low tides and eat young mangrove seedlings.

Coral Mining

Some coral mining occurs in Talise for local construction purposes, particularly in building septic systems. The village headman (*Kepala Desa*) actively discourages coral mining, and the amount of coral mining does not seem to be as severe as in Bentenan and Tumbak.

Lack of a Perceived Crisis with Respect to Coastal Resources

Responses to survey questions concerning changes in household well-being and perceived problems do not show coastal resource depletion or degradation as being a high concern. Difficulty in catching fish was the fifth most frequent reason for changes in household well-being and the eighth most frequent reason for perceived problems. No mention was made in responses to these questions of declining forest resources. However, some residents have reported declining sizes of some species of fish caught and slightly declining catches, and others have mentioned that obtaining wood for boat construction is becoming more difficult. Residents may be reluctant to participate in coastal management initiatives as resource management issues are not perceived as a major problem and therefore benefits are not readily apparent. Pinkerton (1989) has noted that a perceived crisis in resource depletion is a factor that contributes to the success of community-based coastal management. Public education programs will be needed to address this situation.

Misconceptions of Relationships Between Human Activities and Coastal Resources

Analysis of responses to resource belief statements indicates that there are widespread misconceptions concerning relationships between coastal resources and human activities. The larger amount of inaccurate perceptions are related to relationships concerning the possibility of overharvesting fish in the sea, impacts on marine resources from farming the hills, disposal of garbage on the beach, and God's ability to take care of the resources regardless of what humans do. The results of the analysis also show that there is a wide variation within the communities with respect to these beliefs. Some hold beliefs that are more accurate and therefore may be more receptive to coastal management initiatives, while others do not hold accurate beliefs and therefore may be more difficult to convince about the benefits of local action for protecting coastal resources. On the positive side, most people understand that bomb fishing is harmful to the environment, and this does not seem to be as widespread a practice in Talise as it is in Tumbak village. In addition, the low levels of coral mining, and

informal protection of mangroves in the small estuary of Dusun 2 are positive indications that in spite of some inaccurate beliefs, there are already some favorable attitudes and behaviors on which coastal management initiatives can build.

Tourism Potential

Talise Island is a beautiful place with scenic vistas, long stretches of white sandy beaches, forests containing interesting wildlife, seashore caves containing bats, and beautiful coral reefs in excellent condition. These features make it a candidate site for potential international and local tourism development. Coastal tourism has already been established on nearby islands. Lehaga Island is now a beach resort. The southern end of Gangga Island now hosts a beach resort. Bangka Island already has a number of frequently visited dive spots, and the Paradise Beach Resort in Likupang has brought visitors to dive and snorkel on the reefs surrounding Talise and Kinabohutan Islands. Residents of Dusun 3 have expressed concern over potentially negative social impacts associated with tourism development, while residents of Dusun 2 have expressed interest in pursuing potential tourism opportunities.

Intra-Community Diversity

Responses to survey questions resulted in a diversity of responses to questions concerning perceptions of human impacts on coastal resources, and perceived well-being and problems. The number and wide range of types of productive activities between the three dusuns of Talise, as well as differences in ethnicity and religion, demonstrate a variety of lifestyles and coastal uses within the village. There are also significant differences between dusuns for many of the socioeconomic indicators such as material style of life measures, education and land ownership, with Dusun 3 tending to be on the lower end and Dusun 2 on the higher end of these scales. Such diversity demonstrates a need for careful assessments and the utility of a sample survey approach, as reliance on a few key informants or a few focus group discussions could easily provide biased views of the community. The diversity between the dusuns and within each dusun must be taken into account for planning and implementing community-based coastal management initiatives within Talise.

External Stakeholders

Talise is influenced by many important stakeholders who reside outside the community. While these groups may not live in Talise and may only visit the village infrequently, their economic influence has a substantial impact on the use and condition of Talise's coastal resources. External stakeholders include: the managers and owners of the pearl farm, the manager and holder of the coconut plantation lease, individuals who come to Talise to hunt and purchase wildlife, buyers of forest products from outside the community, forest users from the neighboring village of Aerbanua, tourism operators who are starting to bring guests to the Talise area for water sports, and the ornamental fish buyer from Manado who introduced aquarium fish capture techniques. These groups and individuals must be considered and integrated into any coastal management planning effort for Talise.

1.0 INTRODUCTION

The purpose of this report is to provide baseline socioeconomic information to be used in developing, monitoring and evaluating coastal resources management initiatives in the village of Talise. Talise is one of two villages, which make up the small offshore island of Talise and includes the smaller adjacent island of Kinabohutan as well. These islands are located off the northern tip of the Minahasa Regency in North Sulawesi, Indonesia (Figure 1). Talise village was selected as a field site by the Proyek Pesisir (Coastal Resources Management Project - Indonesia) Provincial Working Group in 1997 as it ranked favorably on several criteria established for field site selection. These included the desire to have a small island model site, coastal forests and associated wildlife still remaining on the island, coral reefs in excellent condition, a community which had already initiated local conservation activities and which seemed interested in the project objectives (Tim Kerja Proyek Pesisir, 1997).

Official statistics (Profil Desa, 1997) indicate that the population of the village in 1997 was 1869 persons consisting of 483 households in three distinct sub-village (dusun) settlements. A total of 374 individuals are identified as fishermen, 253 as farmers and 103 persons engaged in animal husbandry, among other minor professions. A large Indonesian-Japanese joint venture pearl farm was established in 1988 and has become one of the two largest employers in the village. Many of the individuals classified as farmers are laborers on the coconut plantation, which rings the lower elevations around most of Talise island. Residents also utilize products from the small forest remaining on the hills of the island. The majority of residents in Dusun 3 on Kinabohutan Island are engaged in pelagic and reef-based fishing and fishing-related activities. Drinking water comes from groundwater in the freshwater lens of the two islands, but in Dusun 1, there are several springs, which have been tapped for drinking, bathing and washing. Hence, the village community can be considered as highly dependent on the marine and land-based coastal resources of these two small islands.

This report was developed through a combination of information-gathering techniques. Village statistics were reviewed (Profil Desa, 1997), key informants were interviewed (Kepala Desa, Kepala Dusun, and participants in coastal activities), activities and technologies directly observed and enumerated, and a survey questionnaire administered to a sample of residents in each dusun of the village. The report details socioeconomic aspects of the three sub-village communities, which includes coastal uses and activities, social structure, residents' perceptions of resource impacts from human activities, and perceived quality of life and problems. While this information provides a baseline for future reference in assessing project impacts, it also serves to help identify potential issues, which may need to be addressed by coastal management initiatives initiated by the community in cooperation with the project.

Environmental surveys were conducted concurrently with the collection of socioeconomic information for this report. The purpose of the environmental surveys was to collect baseline information on environmental conditions for project monitoring and impact evaluation, and to help identify potential resource management issues which the project and community may want to address. Areal extent and condition of coral reefs and related marine habitats was determined and mapped using a handheld GPS, and plotted on a base map derived from the Indonesian coastal environmental map series (Figure 2). Manta tow surveys were conducted along the entire coastline of the village and several permanent transect stations were established for detailed fish census and reef surveys. Trash surveys were also conducted on the beach in each of the sub-villages. The areal extent of the pearl farm lease, actual pearl

production zones, and forested areas were also plotted on the base map. In November of 1998, a detailed technical study of the forest resources and their utilization was initiated (Lee, 1999).

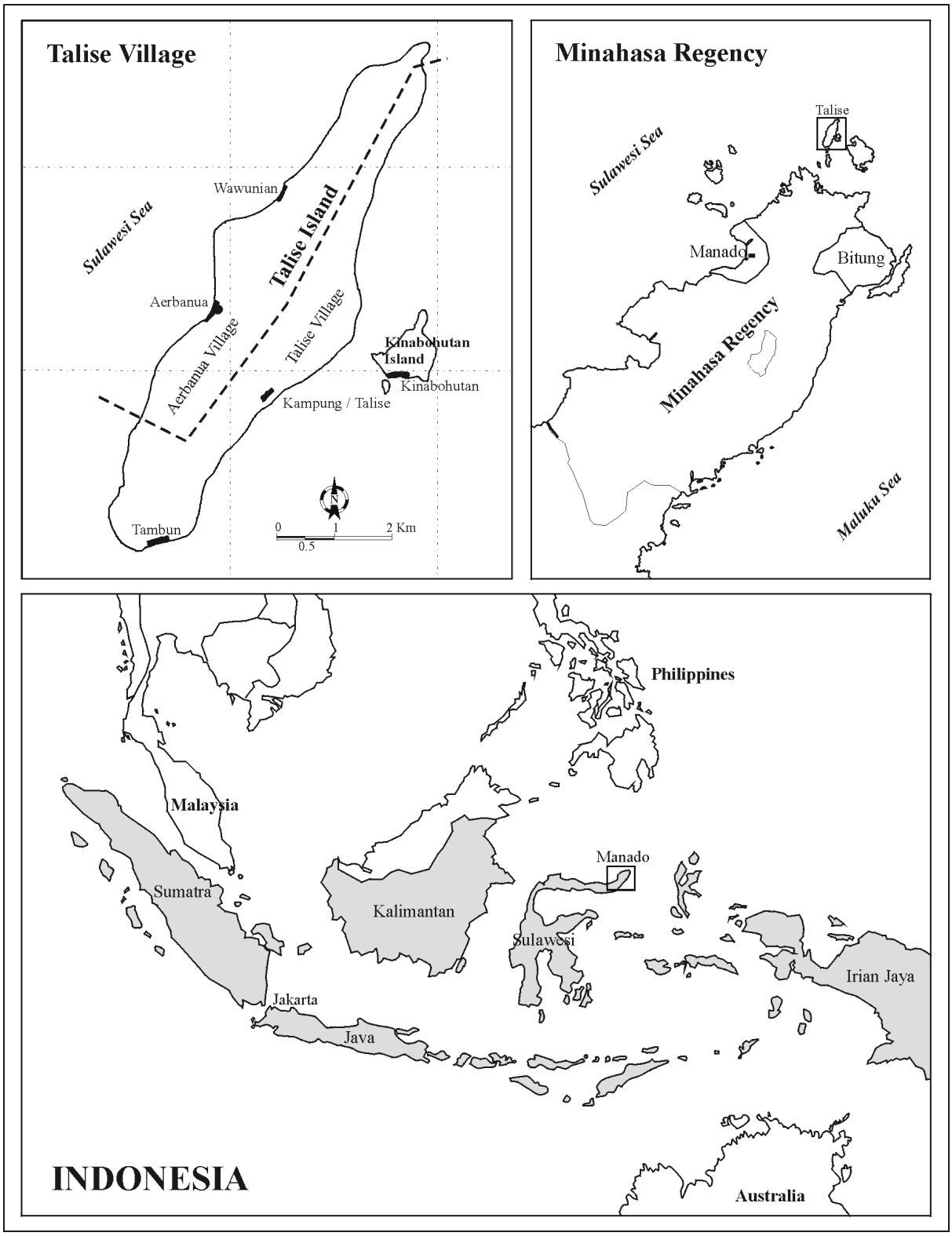

Figure 1. Location of the village of Talise

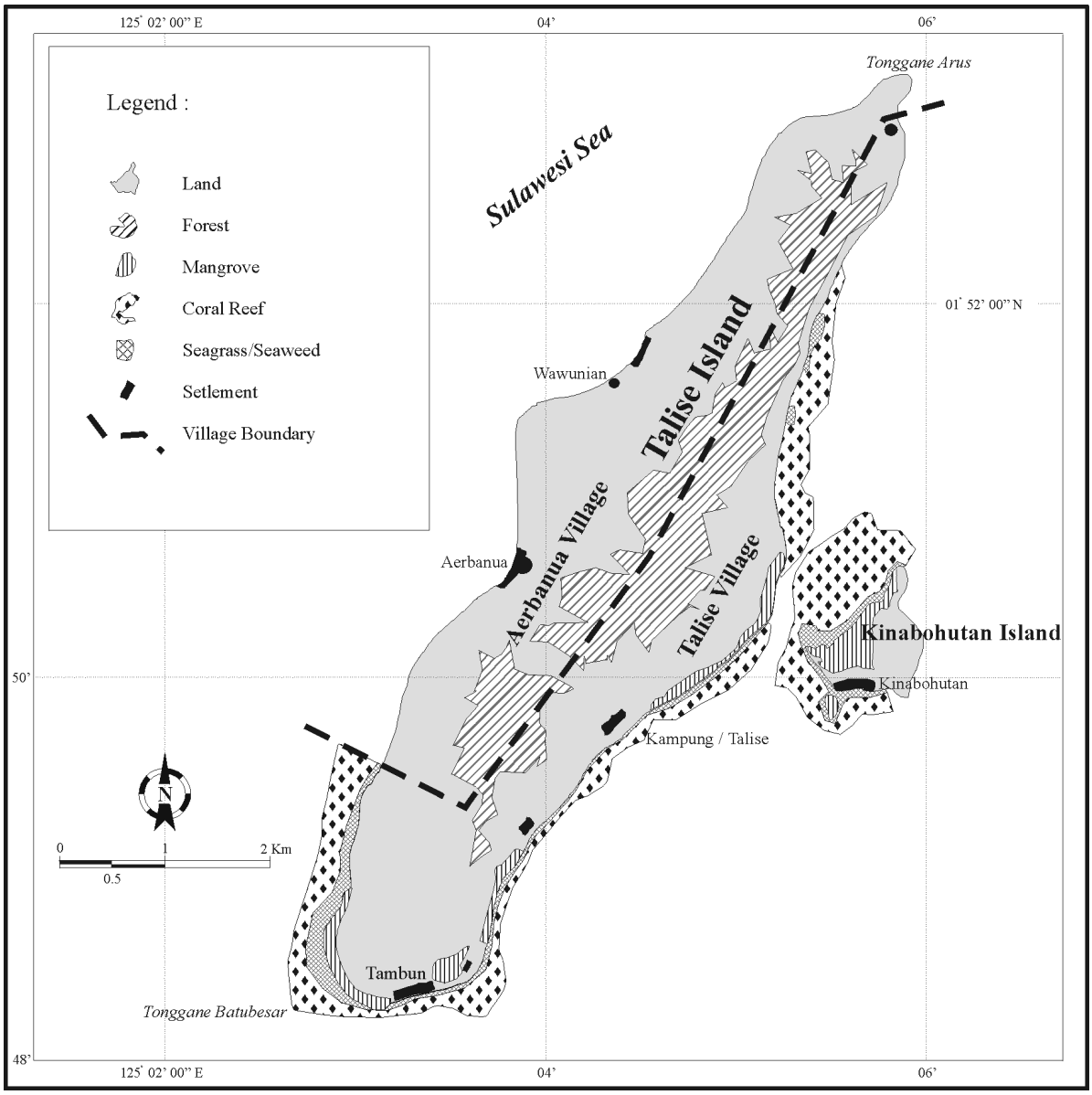

Figure 2. Location of important coastal habitats in Talise

2.0 THE VILLAGE OF TALISE

2.1 ENVIRONMENT

2.1.1 Overview

The village of Talise consists of the eastern half of the island of Talise and the small island of Kinabohutan located just east of Talise Island. There are several other small islands near Talise and Kinabohutan including Tindila, Gangga and Lehaga Islands to the south, and the larger Bangka Island to the east (see Figure 1). These islands, located at the northernmost tip of Sulawesi, are where the Maluku and Sulawesi seas meet. Strong tidal currents rip through the passages between these islands as well as between the island group and the mainland of Sulawesi. An examination of the bathymetry and topography of the area indicates a shallow trench -- between 50 to 100 meters in depth -- to the southeast of Talise, surrounded by these six islands. The volcanic nature of the region suggests that the area may be an ancient caldera, where a volcano may once have grown and exploded, leaving the majority of the present-day crater below sea-level.

The small islands of Lehaga and Kinabohutan show some limestone formations, while the larger islands of Gangga, Talise and Bangka are clearly volcanic in origin. Talise Island is approximately 2000 hectares in size, being approximately 6 km. long (north to south) and less than 2 km., wide (east to west). The central peak on the island is approximately 300 m. in elevation. The steep hillside sections of Talise Island and the upper elevations are covered in a degraded coastal forest. Below the forest are areas of denuded land covered in cogon grass, coconut plantation and small hillside farms. Patches of mangroves line the coast, interrupted by beautiful scenic stretches of white sand beaches. A small mangrove estuary is located on the southeastern end of Talise Island, and the northern end is a rugged, rocky shoreline with several small caves and a lighthouse on the northern point. Settlements are located on the southern end, on the eastern shore southeast of the central peak (Dusun 2 and 1 respectively of Talise village), and in two western shoreline settlements, which make up the village of Aerbanua. Coral reefs surround both Talise and Kinabohutan Islands.

Kinabohutan is a low-lying island of approximately 60 hectares with a small hill on the eastern side. To the north, the coast is sheltered by a mangrove fringe. The western shoreline is a barrier spit that borders the mangroves and is connected to the southern section of the island. The settlement (Dusun 3, Talise) is located on the southern end of the island, which consists of a white sandy beach, and a small offshore patch of mangroves. Residents report erosion is occurring on all sides of the island. Sea turtles nest on occasion along the sandy western shoreline of Kinabohutan as well as on Talise beaches.

2.1.2 Coral Reefs and Fish

Coral reefs surrounding Talise and Kinabohutan total 198 hectares out of a total reef area (reef flat, seagrass beds and coral) of 295 hectares. The reef area on the western end of Kinabohutan stretches almost the entire seafloor distance to the fringing reef of Talise Island. Line Intercept Transect (LIT) surveys of the coral reefs fringing Talise and Kinabohutan have shown a range of total live coral cover (hard and soft) from 43 to 82 percent with an average of 64 percent, and a very low average coral mortality index of 2 percent (Kusen, et al. 1999). There is no indication of any Crown-of-Thorns presence or bomb damage to the reefs.

Therefore, the reef quality is generally in good to excellent condition. Fish census surveys showed few large fish or large numbers of commercially sought after species indicating that the reef area may be overfished.

2.1.3 Mangroves and Sea Grasses

There are approximately 62 hectares of mangroves in Talise village (Kusen, et al., 1999). The majority of mangroves are located in and around Kinabohutan Island, on the southwestern and southeastern tip of Talise Island (excluding the village beachfront of Dusun 2), and in the area stretching just north of Dusun 1. There is evidence of some mangrove cutting and older residents have reported that Kinabohutan Island was almost completely surrounded by mangroves 30 - 40 years ago. Seagrass beds are found primarily on the reef flats and adjacent to mangrove areas. Seagrass area totals approximately 97 hectares (Kusen et al., 1999).

2.1.4 The Forest

Forest areas of Talise Island remain generally above the 100 m. contour elevation, and on the steep hillsides on the eastern side of the island that stretch down to the shoreline. The forests contain numerous species of wildlife including black macaque monkeys, deer, boas, assorted bird life and bats. Deer, monkeys, and bats are hunted. Commercial species of trees used locally for boat building and house construction, and ebony, are present but their abundance is declining. During the period of 1994 to 1998, forest area on the entire island (the villages of Talise and Aerbanua) declined from 959 hectares to 533 hectares, a loss of 56 percent in a four year period (Kusen, et al., 1999; Lee, 1999). At these rates of forest loss, the forest and associated wildlife will disappear within five years.

2.2 POPULATION AND SETTLEMENT PATTERN

Talise recorded a population of 1869 persons in 1997 (Profil Desa, 1997) consisting of 483 households. Modern settlements on the island began in the 1880s when a coconut plantation was started under the Dutch administration. Talise was established as a separate village in 1948 and included the four dusuns of the entire islands of Talise and Kinabohutan. In 1986, Talise was split into two villages. The Dusuns of Aerbanua and Wawonian became the village of Aerbanua, and the remaining three dusuns: Talise, Tambun and Kinabohutan, remained as the village of Talise (Mantjoro, 1997).

During the early 1960s, the Communist Party of Indonesia (Parti Komunis Indonesia-PKI) gained support among the residents of Talise Island in an attempt to take over the coconut plantation from the state. This resulted in military intervention in 1965 to round up PKI supporters and the position of head of village was filled by military or police personnel during the1969-1971 period (Mantjoro, 1997). Since this time, Talise, unlike most villages in Indonesia, has not been able to elect their own village headman, but has one appointed by the government. This period also resulted in migration of residents out of Dusun 1, many of whom moved to Dusun 3, Kinabohutan.

While the overall population of the island has doubled since the 1960s, the population of Dusun 1 has been declining slightly since the 1950s to its current population of 490 persons. Dusun 2 has seen modest growth, doubling since 1965 to the current population of 506. Dusun 3 has seen the most rapid growth, an almost five-fold increase from the 1965

population of 191 persons to the present population of 906 persons (Mantjoro, 1997). The present age distribution of the village indicates that approximately one-third (33 percent) of the residents are 15 years old or younger, one fifth (21 percent) 16 to 25 years, one third (32 percent) between 26 and 45 years, and 14 percent above 45 years old (Profil Desa, 1997). The settlement patterns of each of the dusuns is nucleated and concentrated along the coastline (Figure 3, 4, and 5).

Figure 3. Dusun 1

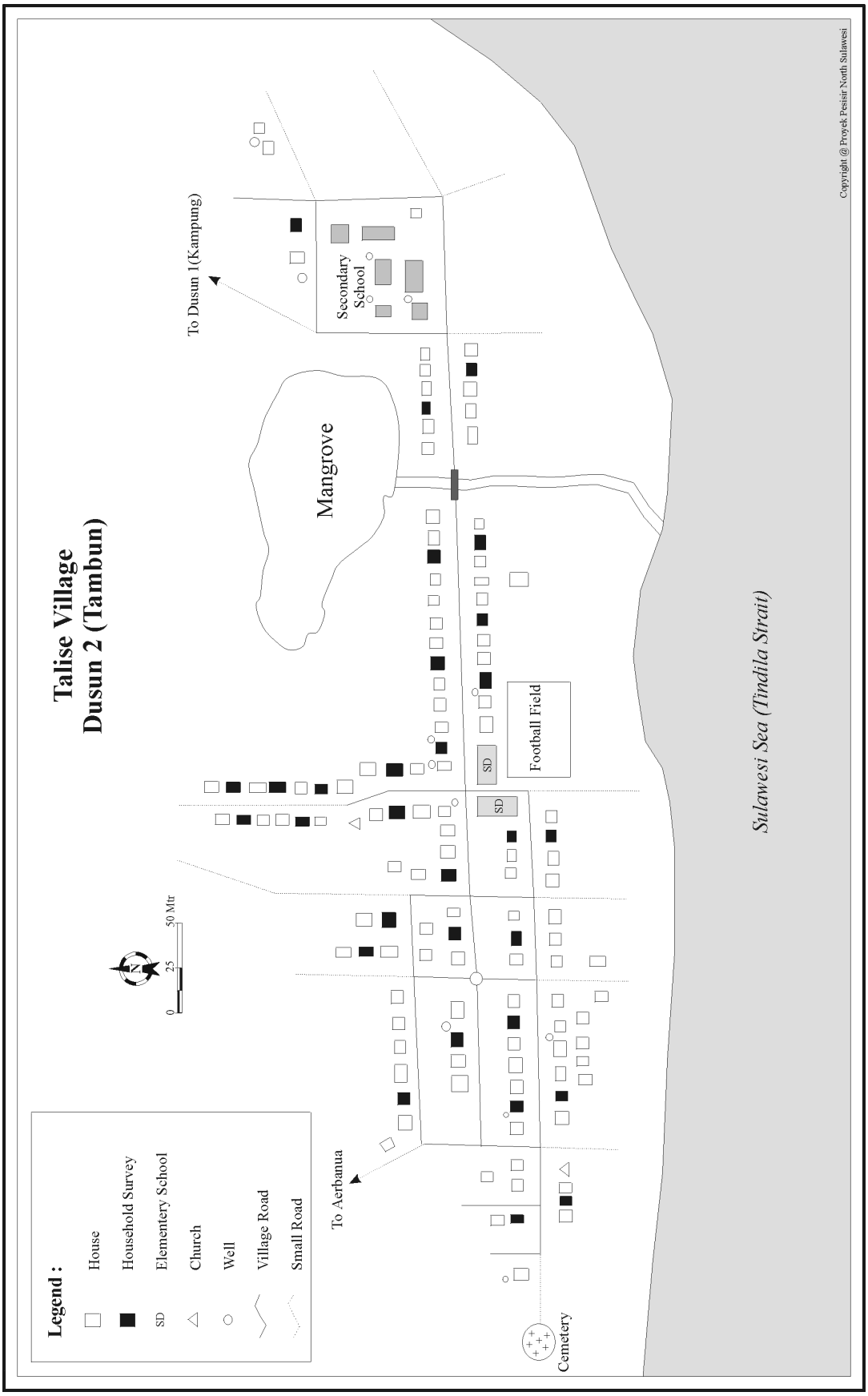

Figure 4. Dusun 2 – Tambun

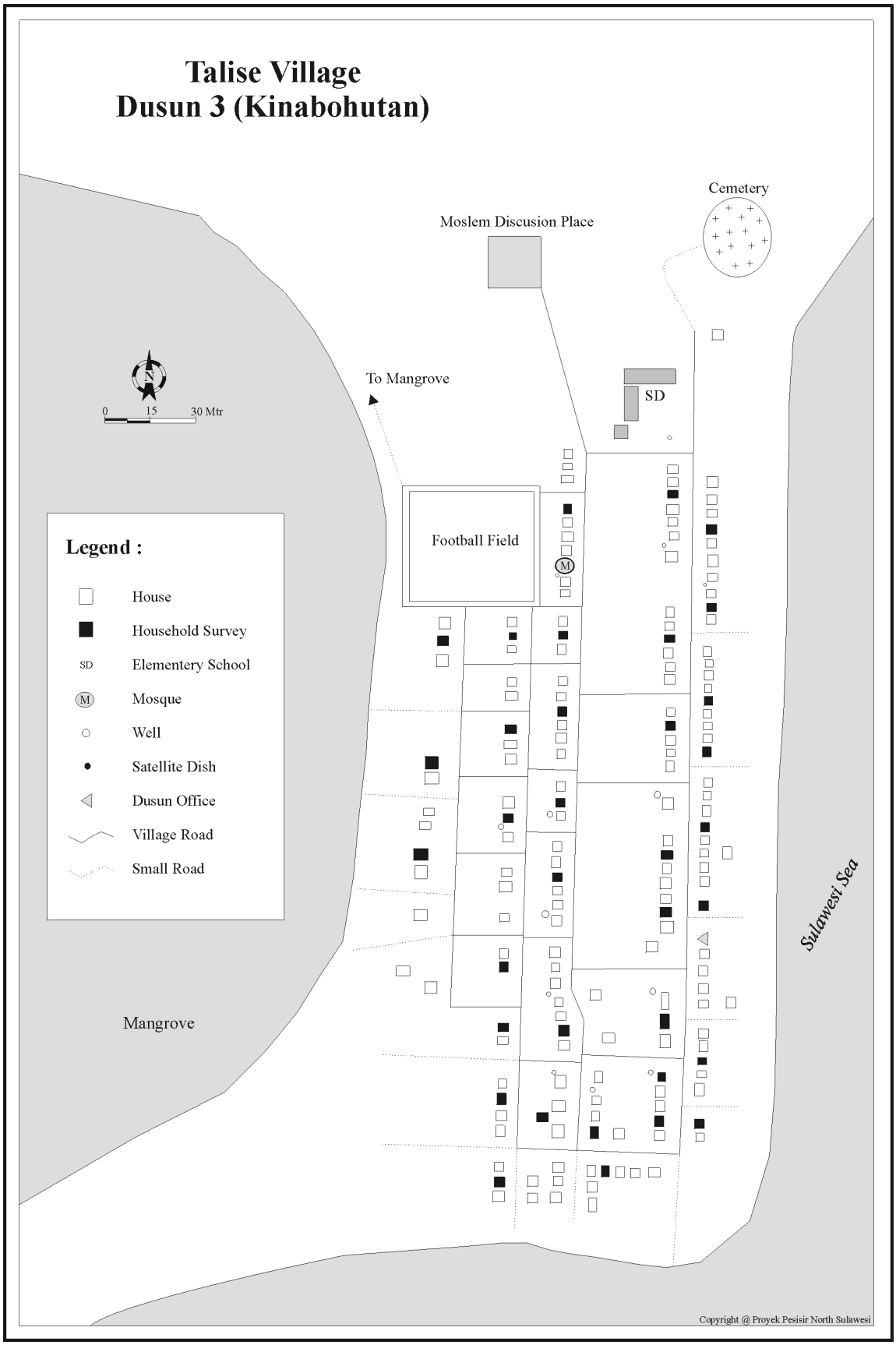

Figure 5. Dusun 3 – Kinabohutan

2.3 INFRASTRUCTURE

There are no motor vehicles (motorcycles, cars, trucks or busses) in the village of Talise. While there are a limited number of dirt roads and a few short cemented sections within the sub-village settlements (6.3 km. of village roads are listed in the Profil Desa, 1997), land transportation within and between sub-villages is almost entirely by foot or boat. Talise is connected to the mainland through the port of Likupang, a one-hour ride in a water taxi (Water taxis are a traditional design, mono-hull wooden boat, approximately 12 meters long and powered by one or two 40 horsepower outboard engines, and used for transporting people and supplies to and from nearby islands and the mainland.). There is one trip per day to and from Likupang to all three dusuns of Talise, and no service on Sundays for Dusuns 1 and 2. Electricity is available on the island between the hours of 6 PM to midnight daily. On Sundays, electricity is available during daylight hours. Approximately 30 percent of the households have septic systems (Pollnac, et al., 1997a). Water supply in Dusun 1 and 2 is from dug shallow wells. In Dusun 1 there are several springs that have been tapped, but the distribution system to community spigots is not functioning and in need of repair. Residents from nearby islands, particularly Kinabohutan and on occasion the beach resort on Lehaga, collect water from the tapped springs in Dusun 1. In Dusun 3, only two wells are considered pure enough to provide drinking water supply. In the summer of 1997, a severe outbreak of "*muntahber*" (a severe form of diarrhea accompanied with vomiting), possibly cholera, occurred in Dusun 3. Two residents died from this outbreak and the Health Department had to be called in to treat affected persons and chlorinate the wells. There are no restaurants on the island but there are several *warungs* (small stores) in each of the sub-villages. Each dusun of Talise has a primary school (grades 1 - 6) and Dusun Tambun has a secondary school. There are 17 primary and 10 secondary school teachers (Profil Desa, 1997).

2.4 SOCIAL STRUCTURE

2.4.1 Occupations

Village statistics (Profil Desa, 1997) provide occupational categories ranked as follows: Out of a total of 902 persons classified as employed, 41.5 percent are classified in the fisheries sub-sector, 28.0 percent in the farming sub-sector, 11.4 percent in animal husbandry, 8.9 percent in services (including government employees), 8.2 percent in small scale industry, and 1.8 percent in large-scale industry. Rural coastal communities in Minahasa generally show high levels of occupational multiplicity (Pollnac et al., 1997a; Pollnac et al., 1997b). Hence, individuals categorized by occupation in village statistics may also have several other sources of productive activities, which are not reflected in the village statistics. For instance, a farmer may also fish and build boats. This is particularly evident when the household is used as a unit of measure where several members may contribute to the productive activities of the household as a whole. Tables 1, 2, 3 and 4 are results of the sample survey and illustrate the diversity of productive activities in each dusun as well as the village overall.

There are substantial differences between the three dusuns as well as some commonalties in the relative ranking of productive activities. For instance, while 69 percent of all households surveyed engage in fishing, it was ranked first by 55 percent of respondents in Dusun 3, by 31 percent in Dusun 2, and by only 11 percent in Dusun 1. Coconut climber and pearl farm employee were the two highest percentage first-ranked activities in Dusun 1; fishing and smoking coconuts were the two highest percentage first-ranked activities in Dusun 2; and

fishing, farming and shop owner were the highest percentage first-ranked activities in Dusun 3. Farming is practiced by 77 percent of respondents but was only ranked as first by 5, 3, and 10 percent of respondents in Dusuns 1, 2 and 3 respectively. However, farming was the highest percentage second-ranked activity in Dusuns 1 and 3 (43 and 30 percent respectively) and second highest percentage (27 percent) second-ranked activity in Dusun 2. Dusun 3 shows a narrower range of productive activities concentrated in the first and second ranks compared to Dusuns 1 and 2, which have higher percentages of respondents with fourth and fifth-ranked activities. Dusun 3 also has fewer types of productive activities. Dusun 3 households therefore, are not as well diversified as Dusuns 1 and 2.

Table 1. Percent distribution of ranking of productive activities in Dusun 1 Talise.

Activity	1st	2nd	3rd	4th	5th	6th	Total**
Farming	05	27	35	22	03	-	92
Gleaning	-	03	19	30	14	03	69
Fishing	11	32	11	-	-	-	54
Raising Animals	-	08	08	03	08	05	32
Processing	-	11	08	03	08	-	30
Coconut Climber	24	-	-	-	-	-	24
Pearl Farming Employee	22	-	-	-	-	-	22
Other Trading	05	05	03	03	03	-	19
Water Taxi	03	03	03	-	-	-	09
Boat Builder	08	-	-	-	-	-	08
Carpenter	08	-	-	-	-	-	08
Smoke Coconuts	08	-	-	-	-	-	08
Elementary School Teacher	04	-	-	-	-	-	04
Fish Trading	-	-	03	-	-	-	03
Total	100*	89	90	61	36	08	
				N = 37			

** Column does not sum to 100 due to rounding.*

*** Row may not sum to total due to rounding.*

Table 2. Percent distribution of ranking of productive activities in Dusun 2 Talise.

Activity	1st	2nd	3rd	4th	5th	6th	7th	Total***
Farming	03	43	37	03	06	-	-	92
Fishing	31	23	09	-	03	-	-	66
Gleaning	-	03	09	40	-	-	03	55
Processing	-	09	11	-	03	-	-	23
Smoke Coconuts	14	-	-	-	-	-	-	14
Other *	14	-	-	-	-	-	-	14
Raising Animals	03	03	03	03	-	-	-	12
Other Trading	-	-	03	03	03	-	-	09
Boat Builder	09	-	-	-	-	-	-	09
Pearl Farming Employee	09	-	-	-	-	-	-	09
Carpenter	06	-	-	-	-	-	-	06
Elementary School Teacher	06	-	-	-	-	-	-	06
Water Taxi	06	-	-	-	-	-	-	06
Seaweed Farming	-	-	-	-	-	03	-	03
Total	100**	78	72	49	15	03	03	
				N = 35				

* *Other categories include: Secondary School Teacher, Fish Cage Farming, Collect and Sell Shells, Diver, and Keeper of Coconut Plantation.*

** *Column does not sum to 100 due to rounding.*

*** *Row may not sum to total due to rounding.*

Table 3. Percent distribution of ranking of productive activities in Dusun 3 Talise.

Activity	1st	2nd	3rd	4th	5th	Total
Fishing	55	25	05	-	-	85
Gleaning	-	18	15	15	05	53
Farming	10	30	10	-	-	50
Processing	5	10	10	05	03	33
Small Shop Owner	10	05	05	-	-	20
Carpenter	08	-	-	03	-	11
Fish Trading	05	05	-	-	-	10
Pearl Farming Employee	05	-	-	-	-	05
Total	100*	93	45	23	08	
	N = 40					

* *Column does not sum to 100 due to rounding.*

Table 4. Percent distribution of ranking of productive activities in Talise (all dusuns).

Activity	1st	2nd	3rd	4th	5th	6th	7th	Total**
Farming	06	33	27	08	03	-	-	77
Fishing	33	27	08	01	-	-	-	69
Gleaning	-	08	14	28	06	01	01	58
Processing	02	10	10	03	04	01	-	30
Raising Animal	01	04	04	05	03	02	-	19
Other *	13	-	-	-	-	-	-	13
Pearl Farming Employee	10	-	-	-	-	-	-	10
Other Trading	02	02	02	02	02	-	-	10
Coconut Climber	08	03	-	-	-	-	-	09
Small Shop Owner	04	-	02	-	-	-	-	09
Carpenter	07	-	-	01	-	01	-	09
Smoke Coconut	07	-	01	-	-	-	-	08
Boat Builder	05	-	-	01	-	01	-	07
Fish Trading	02	02	01	-	-	-	-	05
Seaweed Farm	-	-	-	-	-	01	-	01
Total	100	90	69	49	18	07	01	
					N = 112			

* *Other categories include: Elementary School Teacher, Secondary School Teacher, Water Taxi, PLN Employee, Work at Café Shop, Collect and Sell Shells, Diver, Keeper of Coconut Plantation and Religious School Teacher.*

** *Row may not sum to total due to rounding.*

2.4.2 Education

Years of education is often used as an indicator of social status. Village statistics (Profil Desa, 1997) indicate that the majority of residents have at least six years of formal education, having graduated from elementary school (Table 5). No breakdown by sex was reported in the village statistics, however, a breakdown of education by sex and dusun from survey respondents is provided in Table 6. The majority of residents have elementary school level education only. The survey data shows a similar but smoother distribution compared to the village statistics, with a slightly larger percentage of residents who have not finished elementary school, and higher percentages who have junior or senior high level education.

Analysis of the sample survey data indicates no statistically significant difference between male and female education levels among survey respondents within Dusun 1, 2 or 3 (female = 6.23 yrs., male = 6.32 yrs., $t = 0.161$, $df = 72$, $p > .05$; female = 5.28 yrs., male = 6.53 yrs., $t = 1.706$, $df = 68$, $p > .05$; female = 4.43 yrs., male = 5.40 yrs., $t = 1.759$, $df = 78$, $p > .05$ respectively). There is a statistically significant difference between male and female education levels when the data is aggregated for the entire village (female = 5.31 yrs., male = 6.05 yrs., $t = 1.986$, $df = 222$, $p < .05$). However, the actual difference in means is only less than one year. Analysis of sample survey data also shows statistically significant differences in mean education levels between Dusuns 1 and 2, Dusuns 1 and 3, and Dusuns 2 and 3 (Dusun 1 = 6.27 yrs., Dusun 2 = 5.89 yrs., $t = 0.806$, $df = 142$, $p < .05$; Dusun 1 = 6.27 yrs., Dusun 3 = 4.91 yrs., $t = 3.294$, $df = 152$, $p = .001$; Dusun 2 = 5.89 yrs., Dusun 3 = 5.91 yrs., $t = 2.119$, $df = 148$, $p < .05$ respectively). The largest difference is between Dusun 1 and 3, with a difference in means of over 1 year.

Table 5. Distribution of years of formal education in Talise.

Years of Formal Education	Number of Persons	Percent of Population
Not Finished Elementary School (< 6)	172	09.2
Graduate From Elementary School (6)	1580	84.5
Graduate From Junior High School (9)	61	03.3
Graduate From Senior High School (12)	50	02.7
Graduate From University (>12)	6	00.3

Source: Profil Desa, 1997.

Table 6. Education levels of survey respondents in Talise.

Years of Formal Education	Percent											
	Dusun 1			Dusun 2			Dusun 3			All Dusuns		
	F	M	Total	F	M	Total	F	M	Total	F	M	Total
0 - 3	12.5	14.7	14	25.0	17.6	20	32.5	15.0	24	23.3	15.7	19
4 - 6	62.5	55.9	60	61.1	52.9	58	62.5	62.5	63	62.1	57.4	60
7 - 9	17.5	17.6	17	05.6	11.8	09	02.5	17.5	10	08.6	15.7	11
10 - 12	07.5	11.8	09	05.6	14.7	09	02.5	05.0	04	05.2	10.2	08
> 12	00.0	00.0	00	02.8	02.9	02	00.0	00.0	00	00.9	00.9	00
N	40	34	74	36	34	70	40	40	80	116	108	224
Mean Yrs.	6.23	6.32	6.27	5.28	6.53	5.89	4.43	5.40	4.91	5.31	6.05	5.67

Note: F=Female; M=Male

2.4.3 Land Ownership

Land ownership and distribution is another indicator of social structure. The entire island of Talise and Kinabohutan is classified as national land (*Tanah Negara)*. As such, there is no local ownership of almost all the land. The central and upper portions of Talise Island are classified as production forest but no leases are known to have been issued for logging purposes. Many villagers however, utilize forest products, cut trees for housing and boat construction, and have small farming plots both within the production forest area and on the slopes below. All of these forest and farming areas are classified as government land.

Residents have reported that Dusuns 1 and 2 are in the process of applying for certificate of title for land on Talise, primarily in the settlement areas. As indicated by the results of the household survey, some residents have already managed to obtain certificate of ownership from the government, primarily for housing or animal husbandry purposes (Table 7). This process has taken several years and recent information provided by villagers and the project extension officer indicate that fees have not been paid for title applications submitted several years ago. Hence, the push for extending land ownership for a larger number of residents has come to a standstill. As previously mentioned, government ownership of the coconut

plantation was the reason why in the 1960s, the Communist Party of Indonesia gained support on Talise. To this day, more than 30 years later, this is still an unresolved issue of concern expressed by many of the island residents. Table 7 demonstrates that most of the land used for farming by respondents is classified as squatting (84.1 percent) and another 13 percent classify the land as government land. Additionally, 86.6 percent of the respondents classify the land that their houses sit on as either government land or squatting, 82.4 percent classify land used for animal husbandry as either squatting or government land, and 100 percent of the land used for shops is classified either as squatting or government land.

Table 7. Classification of land among survey respondent land users in Talise.

Classification of Land	Type of Land Use			
	House	Farming	Animal Husbandry	Shop
Certificate of ownership	12.5	01.4	17.6	00.0
Certificate of use	00.0	00.0	00.0	00.0
Certificate of use for business	00.0	00.0	00.0	00.0
Squatting	33.9	84.1	35.3	35.7
Rent from other person	00.9	01.4	00.0	00.0
Government land	52.7	13.0	47.1	64.3
N (% Total)	112 (100%)	69 (61.6%)	17 (15.2%)	14 (12.5%)

Respondents who have certificate of ownership for their house are concentrated in Dusun 1 and 2 (21.6 % of respondents in Dusun 1 and 17.1 % of respondents in Dusun 2). Respondents who have certificate of ownership for their animal husbandry are also located in Dusun 1 and 2 (22.2 % of respondents in Dusun 1, and 16.7 percent of respondents in Dusun 2). Respondents which have certificate of ownership for their farm are located in Dusun 2 (4.2 % of respondents in Dusun 2). There are no certificates of ownership for any land by respondents in Dusun 3.

2.4.4 Material Style of Life

Material style of life, as indicated by house structure and furnishings, provides another indicator of relative wealth or social status in a community. As part of the household survey, the presence or absence of 28 aspects of house construction and furnishings considered by the research team to be indicative of differential social status were recorded for each household included in the survey. Their items and their percent distribution in the village are provided in Table 8. While the percentages of material style of life measures are quite similar between Dusun 1 and 2, there tends to be a consistent pattern of differences with Dusun 3. Dusun 3 has higher percentages of what could be considered poorer household structure items including more houses with bamboo walls, earthen floors, nipa roofs and open window holes. Dusun 3 also has lower percentages of households with services such as electricity, an indoor toilet and piped water. Dusun 3 also has lower percentages for most of the household possessions listed. The material style of life measures coupled with the land ownership data and mean education levels, suggest that Dusun 3 is less well off than Dusuns 1 and 2, located on Talise Island.

While the raw distribution of these material style of life measures are somewhat useful for detailed comparative purposes, it is also useful to determine if there are patterned interrelationships within the data which can be used to construct multi-item scales that may provide a clearer picture of the distribution of material wealth within and between the three dusuns. To accomplish this, the 28 material style of life measures were factor analyzed, resulting in two independent Material Style of Life (MSL) components from which MSL component scores were constructed (See Appendix I for details concerning this analysis). The items with the highest positive loadings on the first component are concrete wall, concrete floor, tin roof, glass windows and electricity; hence, this component was labeled Household Structure Component Score. The highest loadings on the second component were modern stove, satellite dish, television, radio cassette, cupboard, cabinet, chairs, living room set, and indoor toilet; hence this component was labeled Household Possessions Component Score.

The mean scores for each dusun as well as for Dusun 1 and 2 combined (herein after referred to as mainland Talise) are presented in Table 9. These data were analyzed to test for statistical differences between the dusuns. The difference between Dusuns 1 and 2 ($t = 0.813$, $p>.05$), and between Dusuns 1 and 3 ($t = 1.433$, $p>.05$), are not statistically significant for the household structure component scores. Differences between Dusuns 2 and 3 ($t = 2.108$, $p<.05$), as well as between mainland Talise and Dusun 3 ($t = 2.155$, $p<.05$), are statistically significant for the household structure component scores. The difference between Dusuns 1 and 2 ($t = 0.232$, $p>.05$), are not statistically significant for the household possessions component scores. Differences between Dusuns 1 and 3 ($t = 2.286$, $p<.05$), Dusuns 2 and 3 ($t = 3.575$, $p=.001$), as well as mainland Talise with Dusun 3 ($t = 3.299$, $p = .001$), are statistically significant for the household possessions component scores. This analysis reinforces many of the observed socioeconomic differences between the three dusuns. Dusun 3 tends to be at the bottom of the socioeconomic ladder, as it has the lowest mean for material style of life measures for both household structures and household possessions. Dusun 2 tends to be on top of the socioeconomic ladder with the highest mean for material style of life measures for both household structures and household possessions. Dusun 1 tends to fall between these other two dusuns.

Table 8. Percent distribution of Material Style of Life (MSL) measures.

Household Characteristic		Percent			
		Dusun 1	Dusun 2	Dusun 3	All Dusuns
Walls					
	Bamboo walls	48.6	45.7	60.0	51.8
	Wood walls	13.5	05.7	12.5	10.7
	Concrete walls	75.7	85.7	45.0	67.9
Floors					
	Earthen floors	51.4	45.7	60.0	52.7
	Concrete floors	70.3	91.4	47.5	68.8
	Wooden floors	08.1	02.9	00.0	03.6
	Tile floors	02.7	00.0	05.0	02.7
Roofs					
	Nipa roof	48.6	42.9	55.0	49.1
	Metal roof	78.4	85.7	50.0	70.5
	Wooden roof	08.1	00.0	05.0	04.4
Windows					
	Open windows holes	45.9	34.3	47.5	42.9
	Wooden shutters	21.6	11.4	22.5	18.8
	Glass windows	54.1	77.1	35.0	54.5
Services					
	Electricity	64.9	54.3	45.0	54.5
	Indoor toilet	16.2	34.3	05.0	17.9
	Water pipe into house	02.7	02.9	00.0	01.8
Possessions					
	Refrigerator	02.7	00.0	00.0	00.9
	Modern stove*	32.4	28.1	15.0	26.7
	Living room set	78.4	74.3	37.5	62.5
	Chairs	89.2	97.1	72.5	85.7
	Benches	70.3	62.9	85.0	73.2
	Cabinet	35.1	57.1	10.0	33.0
	Cupboard	59.5	62.9	50.0	57.1
	Fan	02.7	0.0	00.0	00.9
	Radio cassette player	27.0	37.1	15.0	25.9
	Television	29.8	22.9	22.5	25.0
	Parabolic satellite antenna	05.4	02.9	05.0	04.5

** Other than wood or charcoal*

Table 9. Analysis of Material Style of Life (MSL) measures.

MSL	Dusun 1		Dusun 2		Dusun 3		Dusun 1 & 2	
Measure	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Household Structure Component Score	0.067	0.878	0.236	0.887	-0.269	1.149	0.149	0.880
Household Possessions Component Score	0.110	1.071	0.342	0.908	-0.401	0.887	0.223	0.995

2.4.5 Ethnicity and Religion

Both ethnicity and religion are important indicators of social groupings and interaction. Table 10 provides a breakdown of the ethnicity of survey respondents in the three dusuns of Talise village. The majority of residents surveyed are Sangir (71 %), Siau (5%) or Sanghir-Siau (4%) mix. These two ethnic groups are from the series of islands north of the Minahasa regency and part of the Regency of Sangir-Talaud. Many of the first modern settlers to Talise came from the Sangir region as laborers when the coconut plantation was established in the last century (Mantjoro, 1997). Sangir peoples are found in many other communities along the Minahasan coast (Pollnac, 1997a) and are typically noted for their fishing abilities. Other minor but important ethnic groups include the mainland Minahasan (3%), Bajo-Sangir mix (3%) and Bajo (2.2). The Bajo ethnic group is well known for their seafaring traditions and communities with majority and minority Bajo populations are scattered along the Minahasa coast. Within the sub-villages of Talise, there are also a large number of other minority ethnic groups present but in very small percentages. Many of these are of Sangir, Bajo and Siau origins mixed with other ethnic backgrounds from Sulawesi, Maluku and Java. Dusun 3 has the largest percentage of other ethnic category (21%) which may in part be due to their high orientation towards fishing and the high percentages of residents that are Muslim.

Table 10. Ethnicity in the dusuns of Talise.

Ethnicity	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Sangir	87.3	71.4	56.3	71.4
Siau	04.1	12.9	00.0	05.4
Sangir-Siau	00.0	10.0	02.5	04.0
Minahasa	02.7	02.9	03.8	03.1
Bajo-Sangir	00.0	00.0	07.5	02.7
Bajo	00.0	00.0	06.3	02.2
Gorontalo	01.4	00.0	02.5	01.3
Other *	04.1	02.9	21.3	09.9
N	74	70	80	224

** Other categories (less than 1 % each) include: Bugis, Buton, Ternate, Bajo-Gorontalo, Ambon, Palu, Jepang-Sangir, Talaud-Siau, Toraja, Siau-Minahasa, Jawa-Minahasa, Jawa Tondano-Minahasa, Kendari-Sangir, Bugis-Bajo, Bajo-Tolitoli -Siau, Ambon-Sangir, Buton-Sangir, Minahasa-Bajo, and Jawa-Ternate.*

The results of the survey indicate that 35.7 percent of the respondents in Talise are Muslim and 64.3 percent are Christian. However, religion varies by location. Dusun 3 is almost entirely Muslim (97.5 percent of respondents), whereas 100 percent of Dusun 2 and 97.3 percent of Dusun 1 are Christian.

2.4.6 Village Governance and Institutions

The village of Talise is structured like most other villages in Indonesia. There is a head of village (Kepala Desa), but as previously mentioned, Talise is not allowed to elect this leader due to Communist Party of Indonesia (PKI) activities in this area during the 1960s. The head of village in Talise is an appointed position. This is unusual as most village headmen are elected. The previous and present Kepala Desa are not from Talise, but are from villages on the Minahasa mainland. The village has a LKMD (Lembaga Ketahanan Masyarakat Desa) and a LMD (Lembaga Masyarakat Desa) that, according to the village profile (Profil Desa, 1997), are both functioning entities for community governance. The village has a full contingent of village officers including a village secretary, finance officer, etc. Each Dusun has a Kepala Dusun (Head of Dusun) and several Dusun government officers. The dusun officers are unpaid positions. The geographic separation of the three dusuns in Talise makes dusun government an important entity along with the village governance institutions. Under Indonesian law, villages are able to enact local ordinances, and the village profile records two ordinances as being approved. In Dusun 2, they have been conducting beach clean-ups every Friday. Sectoral programs within the village include a drinking water project, mangrove reforestation project, a special village development project (Bandes) and IDT. IDT (Inpres Desa Tertinggal) is a special development fund from government for villages classified as less developed (Profil Desa, 1997).

In 1997, Talise had a local village budget allocation (APPKD) of RP 98,905,000 with additional local village revenues of RP 7,950,000. There is an active women's group (PKK) of 90 individuals involved in several activities such as managing a revolving fund loaned to individuals for small scale projects, raising medicinal herbs and spices, weekly health and nutrition programs for small children, etc. "Gotong Royong" groups are active. These are groups of residents who assist each other with projects such as building a house, construction of public facilities, cultural events, etc. There is an active youth group, "Karang Taruna," involved in sporting, arts and recreational events. There are several other groups such as a farmers group, funeral services group and a Moslem youth group (Profil Desa, 1997).

2.5 COASTAL ACTIVITIES

2.5.1 Introduction

The major human activities which can have an impact on the quality of coastal resources or which provide important sources of livelihood for many coastal residents are described in this section. As an island community, many residents rely on fishing. Fishing vessels and nets are typical sights along the beaches fringing the settlement areas. Farming is also important. The small size of Kinabohutan Island and the infertility of most of its soils, limit farming on this island. However, the hillsides of Talise Island and the forest areas provide ample space for farming. Talise Island is ringed with many coconut trees, particularly on the less steep hillsides on the southern end of the island. One of the first physical structures seen when approaching the island by sea from the port of Likupang is the shore-based facilities of a large pearl farming operation. As one approaches the island, large swaths of the sea south of Kinabohutan Island and southeast of Dusun 1 are littered with buoys indicating the locations of pearl oysters being cultured from hanging lines. The upper portions of the island is covered by a forest that provides many households with products ranging from firewood, lumber for boats, houses and furniture construction, and other minor products. The forest is also a critical

watershed for several freshwater springs, which are the main drinking water supply for households in Dusun 1. Sand is mined from several beaches for use as anchors for pearl farming. The sand is bagged in sacks and these sandbag anchors require frequent replacement. Residents of Kinabohutan have also reported that offshore sand mining (pure white coral-based sand) was conducted by a company for use in an artificial lagoon at a hotel construction site just south of Manado. Activities of village residents and industries impact on the condition of land and marine-based coastal resources. Their maintenance in a healthy condition is critical to providing a sustainable source of livelihood, including food, income and other daily needs, to a majority of the village residents.

2.5.2 Farming

Farming is conducted on the hillsides behind the settlement areas of Talise and on small plots within the forest. A small amount of land on Kinabohutan is also used for farming, but the small land area and poor fertility limit the amount of farming on the island. Small backyard gardens can also be observed within the settlement areas as well. Village statistics (Profil Desa, 1997) list farming as the second most important occupation in the village (253 persons), behind fishing (374 persons) but higher than animal husbandry (103 persons). These statistics, however, refer to individuals who identify farming as their occupation. However, in rural communities, particularly in the Minahasa Regency, coastal households have a high degree of occupational multiplicity (Pollnac et al., 1997a, 1997b), and this is also exhibited in Talise village. The survey data tend to show that farming may actually be more important than what one might assume from the village statistics alone. Farming is the most frequently mentioned productive activity (77% of households) in Talise followed by fishing and gleaning (see Tables 1, 2, 3 and 4). It is the most frequently mentioned productive activity in Dusuns 1 and 2, but the third most frequently mentioned in Dusun 3. Farming however, is not most frequently ranked as the most important activity (Table 11). It is more frequently ranked second or third in importance. Dusuns 2 and 3 have 92 percent of respondents who list farming as a productive activity whereas Dusun 3 has only 50 percent. Since Dusun 3 has such limited land availability (approximately 60 hectares for a population of 906 persons) this 50 percent figure may seem surprising, but many Kinabohutan residents farm land on plots located on Talise Island in addition to a small number of farm plots located on Kinabohutan Island.

Table 11. Percent distribution of rank importance of farming.

Rank	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
1	05	03	10	06
2	27	43	30	33
3	35	37	10	27
4	22	03	00	08
5	03	06	00	03
Total %	92	92	50	77
N	34	32	20	86

Survey results of land ownership show that most households engaged in farming do not own the land they use for farming. Among respondents who stated that they use land for farming, 95.1 percent classify ownership of land as either squatting or government land (see table 7).

Only 1.4 percent claim to have certificate of ownership and another 1.4 percent state that they rent the land from another person. Fifty percent of plot sizes are .5 hectares or less and approximately 15 percent are 2 hectares or greater (Table 12).

Table 12. Percent distribution of farming plot sizes among farming households.

Area (Ha)	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
< 0.1	05.9	15.6	10.0	10.5
0.2 - .5	41.2	37.5	40.0	39.5
.6 – 99	08.8	00.0	10.0	05.8
1.0 – 1.99	29.4	34.4	20.0	29.1
2.0 – 2.99	11.8	12.5	15.0	12.8
3.0 – 4.0	02.9	00.0	05.0	02.3
N	34	32	20	86

Farming is mostly carried out by adult males and females, or by adult males alone (Table 13). Only a small percentage of respondents reported that adult females work alone (5.8 %), or that children or young males are involved with adults (12.9 %).

Table 13. Percent distribution by sex and relative age in farming Activities in farming households.

Age and Sex Status	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Adult M	20.6	12.5	15.0	16.3
Adult F	00.0	09.4	10.0	05.8
Adult M & F	58.8	75.0	60.0	65.1
Adult & Children	02.9	03.1	10.0	04.7
Adults F & Young M	02.9	00.0	00.0	01.2
Adult & Young M	14.7	00.0	05.0	07.0
N	34	32	20	86
Note: M = Male; F = Female				

Types of crops grown are reported in Table 14. Cassava is the most frequently grown crop followed by banana, coconut and maize. While rice is grown, it is primarily hillside “ladang” rice rather than “paddy” rice. Only 14 percent of respondents engaged in farming grow one crop (Table 15). More than half (54%) grow two or three crops, and almost one third (30 %) grow more than 3 crops.

Table 14. Percent* distribution of crops grown by type.

Crop Type	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Cassava	97.1	96.9	90.0	95.3
Banana	79.4	71.9	70.0	74.4
Coconut	23.5	46.9	15.0	30.2
Maize	41.2	15.6	00.0	22.1
Vegetables	05.8	18.8	15.0	12.8
Rice	17.7	09.4	10.0	12.8
Spices	05.8	12.5	20.0	11.7
Chili	11.8	15.6	00.0	10.6
Taro	14.7	00.0	05.0	07.0
Mango	05.8	06.3	05.0	05.8
Peanut	05.8	03.1	05.0	04.7
Cashew nut	00.0	09.4	05.0	04.7
Tomato	05.8	00.0	00.0	02.3
N	34	32	20	86

** Percent of those who reported farming as an activity.*
Note: Columns sum to more than 100 as most respondents grow several crop types.

Table 15. Percent distribution of number of different crops grown by farming households.

Number of Crops Grown	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
1	05.9	12.5	30.0	14.0
2	32.4	25.0	30.0	29.1
3	23.5	28.1	25.0	25.6
4	26.5	18.7	05.0	18.6
5	05.9	12.5	05.0	08.1
6	05.9	00.0	05.0	03.5
7	00.0	03.1	00.0	01.1
N	34	32	20	86

While some respondents who identified farming as a productive activity listed coconuts as one of the crops they grow, many other respondents are involved in the coconut plantation industry. These individuals are laborers on the coconut plantation and include activities or occupations such as coconut climber, smoking coconuts and keeper (caretaker) of the coconut plantation. The coconut plantation is owned by the government and was taken over from Dutch owners after independence. The plantation is leased by the government to an individual who lives in Molas, just north of Manado. Key informants on Talise have reported that although the lease owner is supposed to replant older coconut trees, he has not fulfilled the quota for replanting as required by the lease agreement. Government ownership of the plantation, its lease to outsiders, coupled with the lack of land ownership by island residents

are all part of the same decades-long dissatisfaction over land tenure felt by community members.

2.5.3 Capture Fishery

The capture fishery plays and important role in the life of residents of Talise village as would be expected of a rural island community. The beaches in front of the settlement areas of the three dusuns are lined with fishing vessels, and it is not uncommon to see nets being hung adjacent to houses, or people engaged in fish smoking, fish meal making, or marketing fish. Both during the day and in the evening, fishing boats can be seen arriving and departing from the shoreline. Fishing was mentioned by survey respondents as the second most important productive activity (69 %), just behind farming (77 %). Gleaning, which can be considered a specialized form of fishing which does not require a fishing boat or expensive gear, was the third most frequently mentioned productive activity (58 %). The relative importance of fishing and gleaning, correlated by dusun, are provided in Table 16. Dusun 3 has a much higher overall dependence on fishing compared to dusuns 1 and 2, and a larger percentage who mention fishing as the most important productive activity. Dusun 3 tends to rank gleaning more frequently as the second most important activity than Dusuns 1 or 2. However, overall, Dusun 1 has a slightly higher percentage who rank gleaning as a productive activity.

Table 16. Percent distribution of rank importance of fishing and gleaning of household respondents.

Activity	Rank	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Fishing	1	11	31	55	33
	2	32	23	25	27
	3	11	09	05	08
	4	00	00	00	01
	5	00	03	00	00
	Total (%)	54	66	85	69
Gleaning	2	03	03	18	08
	3	19	09	15	14
	4	30	40	15	28
	5	14	00	05	06
	6	03	00	00	01
	7	00	03	00	01
	Total (%)	69	55	53	58

There are several types of boats that are used by fishers in Talise. Table 17 provides an estimation of vessel numbers based on key informants and from direct counts made along the beach in April 1998. The most common are the *londe* (a double outrigger dugout canoe), *pelang* (a double outrigger dugout canoe) and *bolotu* (dugout canoe). Detailed descriptions of these vessel types and associated gears can be found in Pollnac, et al. (1997b). *Bodi* is similar to a pajeko boat but smaller in size (approximately 12 meters long and 2.7 meters wide), and deploys either the *giop* or *tagaho* (purse seines) gears. *Rorohe* is a boat that is 10 - 15 meters in length and 3 - 5 meters in width, and carries a crew of 5-8 persons. This type of vessel is used for shark fishing using a nylon net in the Maluku Islands. The boat makes trips of from

2 - 3 months duration until it has a cargo of shark fins, dried fish, and other products such as bananas. *Katingting* refers to a boat (usually a londe) powered by a motor mounted on the side of the vessel with a long shaft which attaches the propeller to the engine. *Kapal Besar* and *Kapal Operasi* are large vessels over 10 meters in length that are typically used with divers using hookah gear for large reef-related fish species and the live fish trade. Dusun 3, which relies more on fishing than the other dusuns, has a larger fleet of vessels, particularly the *pelang* and *bodi* vessel types. The *londe* is by far the most frequently mentioned vessel used by these households.

Table 17. Vessel counts: April 1998.

Vessel Type	Vessel Numbers from Key Informants				Vessel Counts on Beach	
	Dusun 1	Dusun 2	Dusun 3	Total	Dusun 1	Dusun 2
Londe	30	39	55	124	34	41
Pelang	05	06	43	54	09	05
Bolotu	04	03	09	16	06	02
Bodi	02	01	11	14	01	04
Rorohe	00	00	01	01	00	00
Katinting	00	00	01	01	00	00
Kapal operasi	00	02	00	02	00	02
Kapal besar	00	01	00	01	00	00

Table 18. Percent distribution of boat-using households using different vessel types.

Vessel category	Dusun 1	Dusun 2	Dusun 3*	All Dusuns*
londe , small no motor	89.5	84.2	52.9	70.8
bolotu	00.0	00.0	17.6	08.3
londe, medium no motor	05.3	10.5	05.9	06.9
pelang, large no motor	00.0	00.0	11.8	05.6
pelang, medium no motor	00.0	00.0	05.9	02.8
pelang, small motorized	00.0	00.0	05.9	02.8
londe, small motorized	05.3	00.0	00.0	01.4
pajeko	00.0	00.0	02.9	01.4
pelang, large motorized	00.0	05.3	00.0	01.4
Bodi	00.0	00.0	05.9	0.28
giop	00.0	00.0	05.9	0.28

* Column may sum more than 100% as fisher may use more than one boat type.

Small =< 5 m long; medium =>4.99 m long; and < 1 m wide; large =>4.99 m long and > 1 m wide

Key informants report that a typical *pelang* in Talise costs approximately RP 1,000,000. It usually deploys the *tagaho* gear that costs an additional RP 250,000, and typically carries a crew of 6 to10 persons. *Bodi* are larger vessels than the *pelang*, and cost approximately RP 1,500,000. *Bodi* use *tagaho* or *giop* gears which cost approximately RP1, 500,000, and use crews of 13-15 persons for *tagaho,* or 7 to 9 persons for a *giop*. The typical *londe* (approximately 5 meters in length) costs only RP 125,000 and if deploying *soma paka-paka* or *rarape*, these gears cost approximately RP32,000 and use a crew of 1 to 3 persons. Table 18 provides the percent distribution of households whose members fish from the different vessel types.

A large number of gear types are used in Talise. The percent distribution of gear types used by households involved in the capture fishery are listed in Table 19. Twenty-two different gear types were mentioned by survey respondents. The most popular is the handline that is normally used from a *pelang* or *londe*. There are many different types of handlines. For example, opas is a handline operated from a boat at night time using hermit crabs, worms or small fish for bait. *Sarensing* is a polyethelene handline which uses a lure fashioned from nipa with a stone weight attached. The weight is released once the line reaches a depth of approximately 60 *depa* by giving the line a hard pull which releases a slip knot holding the weight. The line is then pulled slowly to the surface. *Pancing bonceng* is a technique that uses a long polyethelene line on the reef flat, near or on seagrass beds. Every 2 meters along the main line, a hook is hung with bait. It is placed on the reef flat at high tide and then checked periodically for fish. *Pancing suntung* refers to hand lining for squid. Speargun was the second most frequently mentioned gear type and can be operated from a *londe*, or used by swimming out to the reef directly from shore. Eleven different types of *soma* gears were listed as being used by survey respondents, which collectively account for over 48 percent of the gear types used. *Soma* is a generic name used for a variety of fishing gears traditionally used in North Sulawesi for catching a variety of fish species. The variations in the *soma* gear names refer to either different fish species caught (e.g. Soma roa, Soma lolosi, soma sardine) or variations in the gear design (e.g. Soma Pajeko, Soma bodo). Other gears used include *dodopa* which is a type of three pronged harpoon used from a boat on the reef flat at night. *Jala* refers to a non-defined generic net, typically a gill net. Two types of traps are used -- *igi ambon* (referring to a trap style from Ambon) and *igi* for ornamentals. This is a trap design newly introduced to Talise by an ornamental fish buyer from Manado.

Table 19. Percent distribution of gear types used among households involved in the capture fishery.

Gear Type	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Hand line	75.0	87.0	50.0	67.5
Speargun	20.0	21.7	11.8	20.8
Soma paka-paka	10.0	08.7	02.9	18.5
Soma roa	00.0	00.0	17.6	07.8
Soma rarape	00.0	04.3	08.8	05.2
Dodopa	15.0	04.3	00.0	05.2
Jala	00.0	08.7	05.9	05.2
Igi ambon	10.0	00.0	02.9	03.9
Bagan	00.0	00.0	08.8	03.9
Soma suntung	00.0	00.0	08.8	03.9
Soma tahago	00.0	04.3	02.9	02.6
Harpoon	05.0	00.0	02.9	02.6
Soma bodo	05.0	04.3	00.0	02.6
Soma pajeko	00.0	00.0	05.9	02.6
Purse seine (*giop*)	00.0	00.0	02.9	01.3
Igi for ornamentals	05.0	00.0	00.0	01.3
Pelagic long line	00.0	04.3	00.0	01.3
Soma sardine	05.0	00.0	00.0	01.3
Soma landra	00.0	04.3	00.0	01.3
Soma kalasi	00.0	00.0	02.9	01.3
Pancing suntung	00.0	00.0	02.9	01.3
Soma lolosi	00.0	00.0	02.9	01.3
N	20	23	34	77

** Column may sum more than 100% as fisher may use more than one boat type.*

Table 20 lists summary information provided by key informants concerning some of the more frequently used gears, seasons they are operated, location of operation, type of fish caught, prices paid and market locations. It should be noted that most of these larger gear types (purse seines or lift bag net) catch several different species of fish, often at different seasons of the year. Prices received by the fishers vary based on size (Type 1, 2, 3) of the fish caught. In addition, the quantity of fish caught can vary tremendously from day to day.

Table 20. Gear type fishing locations, seasons, fish caught, and marketing destinations

Gear Type	Season	Location of Use	Types of Fish Caught (local names)	Prices (Rupiah)/ Typical Catch (prices in April 98)	Marketing Outlets & Destinations
Tagaho	Dec - Aug	In front of village, Pulisan point, surrounding islands	Mai-mai	Type 1 5,500/kg Type 2 5,000/kg Type 3 4,000/kg	Fish venders to Likupang, Manado,
			Gosao	Type 1 3,000/kg Type 2 1,500/kg Type 3 1,000/kg	Tomohon, Langowan, Tondano
Paka-paka	year round -depends on tides	In front of village, Tidala island, and surounding islands	Kakatua Beronang Gutila	2,000/kg 1,500/kg 2,000/kg min 10 kg/day max 30kg/day	Pt.HSI Within the village Fish venders
Rarape	year round -depends on tides	In front of village, Tidala island, and surounding islands	Kakatua Beronang Gutila	2,000/kg 1,500/kg 2,000/kg min 5 kg/day max 30kg/day	Pt.HSI Within the village Fish venders
Giop	Dec-March	In front of village, Pulisan point, surrounding islands	Roa	Wet: 30-100/piece Dry: 2,250/rack min 300 pieces max 20,000 pieces	Fish venders to Likupang, Manado, Tomohon,
	Dec-March		Deho	200-1,500/kg min 300 pieces max 4,000 pieces	Langowan, Tondano
	June-Aug		Tude/Oci	50-250/piece or 1,500/kg min 500 pieces max 10,000 pieces	
	June-Aug		Malalugis	1,000-1,500/kg min 500 pieces max 10,000 pieces	
Bagang	Dec-March	In front of village	Gosao & Mai-mai	2,500/basket 80,000/full funae boat	Sold to Funae boat
			Mai-mai	Type 1 5,500/kg Type 2 5,000/kg Type 3 4,000/kg	Fish venders to Likupang, Manado
			Gosao	Type 1 3,000/kg Type 2 1,500/kg Type 3 1,000/kg	

As reported by key informants, the share system in Talise for the larger boats and gears such as *bodi*, *pajeko* and *giop* are similar. The boat owner and crew each get 50 percent of the revenues after sale of the fish, and after expenses have been deducted. This share is then divided equally among all members of the crew. The *tonaas* (the person who directs the boat and deployment of the gear -- the boat captain, but not a helmsman) gets a crew share plus a share from the boat owner. Actual share systems however, can vary considerably from this

general and simplified description. For more details of variations in how share systems work for different gears and boats in the Minahasa region, see Pollnac et al. (1997b).

For *bagang* gear (a stationary bag lift net usually moored just south of Kinabohutan Island), the catch is sold during the rainy season to a *funai* boat. The *funai* boat will take the catch to Likupang for sale and the owner of the *bagang* then gets 20 - 30 percent of the revenues and the remainder goes to the *funai* boat. During the dry season, the fish is brought to shore and dried before being sold through market channels in Likupang.

Most fish are marketed locally within the village to fish venders (middlemen), directly to residents, or sold to the pearl farm that supplies meals to its workers. One fish buyer in Kinabohutan purchases reef-associated species such as groupers, snappers, rabbit fish, goat fish, etc., and places them in containers with ice. These fish are then sold every few days to buyers in Likupang or Manado. Many of these higher priced fish wind up in the Manado market or in the numerous seafood restaurants in Manado. *Ikan roa* is processed on Kinabohutan in smokehouses built of bamboo and nipa. Approximately 20 pieces of *ikan roa* are placed on a small bamboo rack called a *gepe* and then smoked for one to two days. These racks are then sold for RP 22.500 per *ikat* (1 *ikat* = 10 *gepe*) either to middlemen in Likupang or brought directly to Manado for sale. *Ikan deho* and *ikan mai-mai* (a type of anchovy but a different species than *ikan puteh*) is sold fresh to fish buyers in Talise, and then resold in the markets of Likupang or Manado. *Ikan uhi* is sold fresh to fish venders and then transported and sold in Likupang, Manado or Tondano.

Distribution of vessel ownership among boat-using households is provided in Table 21. Vessels with the lowest percentage of ownership are the several types of *pelang,* as well as *bolotu*, *bodi* and *giop*. It is difficult to draw any relationships between vessel size or cost with vessel ownership from these data due to the low number of boat using households for many of the vessel types. However, there is usually a tendency for smaller boats to be owned by users, and for larger boats, users tend to be crew rather than owners (Pollnac et al, 1997b).

Table 21. Percent distribution of boat ownership among boat-using households using different vessel types.

Vessel category	Dusun 1		Dusun 2		Dusun 3		All Dusuns	
	No.	%	No.	%	No.	%	No.	%
londe , small no motor	17	76.4	16	87.5	18	100.0	51	88.2
bolotu	00	00.0	00	00.0	06	50.0	06	50.0
londe, medium no motor	01	00.0	02	100.0	02	100.0	05	80.0
pelang, large no motor	00	00.0	00	00.0	04	50.0	04	50.0
pelang, medium no motor	00	00.0	00	00.0	02	50.0	02	50.0
pelang, small motorized	00	00.0	00	00.0	02	50.0	02	50.0
londe, small motorized	01	100.0	00	00.0	00	00.0	01	100.0
pajeko	00	00.0	00	00.0	01	100.0	01	100.0
pelang, large motorized	00	00.0	01	100.0	00	00.0	01	100.0
bodi	00	00.0	00	00.0	02	50.0	02	50.0
giop	00	00.0	00	00.0	02	50.0	02	50.0

No. = total number of households using indicated boat type.
Small =< 5 m long; medium =>4.99 m long; and < 1 m wide; large =>4.99 m long and > 1 m wide.

Distribution of gear ownership among gear-using households is provided in Table 22. Gears with the lowest level of ownership are *soma-roa*, *soma rarape*, *soma pajeko* and *soma paka-paka*. Low numbers of households using certain gear types makes it difficult to see any relationship between gear size or cost and ownership. However, it is not unusual to see more expensive and labor intensive gears less likely to be owned by gear users (Pollnac, et al., 1997b).

Table 22. Percent distribution of gear ownership in households using the gear type.

Gear Type	Dusun 1		Dusun 2		Dusun 3		All Dusuns	
	No.	%	No.	%	No.	%	No.	%
Hand line	15	93.3	20	100.0	17	100.0	52	98.1
Speargun	04	75.0	08	100.0	04	100.0	16	93.8
Soma paka-paka	02	00.0	02	100.0	01	100.0	05	60.0
Soma roa	00	00.0	00	00.0	06	50.0	06	50.0
Soma rarape	00	00.0	01	100.0	03	33.3	04	50.0
Dodopa	03	100.0	01	100.0	00	00.0	04	100.0
Jala	00	00.0	03	100.0	02	00.0	05	60.0
Igi ambon	02	100.0	00	00.0	01	100.0	03	100.0
Bagan	00	00.0	00	00.0	03	100.0	03	100.0
Soma suntung	00	00.0	00	00.0	03	100.0	03	100.0
Soma tahago	00	00.0	01	100.0	01	100.0	02	100.0
Harpoon	01	100.0	00	00.0	01	100.0	02	100.0
Soma bodo	01	100.0	01	100.0	00	00.0	02	100.0
Soma pajeko	00	00.0	00	00.0	02	50.0	02	50.0
Purse seine (*giop*)	00	00.0	00	00.0	01	100.0	01	100.0
Igi for ornamentals	01	100.0	00	00.0	00	00.0	01	100.0
Pelagic long line (*palento*)	00	00.0	01	100.0	00	00.0	01	100.0
Soma sardine	01	100.0	00	00.0	00	00.0	01	100.0
Soma landra	00	00.0	01	100.0	00	00.0	01	100.0
Soma kalasi	00	00.0	00	00.0	01	100.0	01	100.0
Pancing suntung	00	00.0	00	00.0	01	100.0	01	100.0
Soma lolosi	00	00.0	00	00.0	01	100.0	01	100.0

No. = total number of families using indicated gear type.
% = percent of using families who own the gear.

The distribution of labor by age and sex categories for different gear types is provided in Table 23. Fishing is almost totally an adult male dominated occupation except for a small percentage of females who work alongside adult males for hand lining and traps (*igi*). Even young males have a low percentage of representation in fishing activities, being restricted to working alongside adults for trap fishing (*igi*), some purse seines (*soma rarape* and *soma sardine*), and spear fishing and hand lining.

Table 23. Percent distribution of labor by age and sex categories for each gear type.

Gear Type	Adult Males	Adult Male & Female	Male Adult & Young Male	Adult & Young Male
Hand line	96.2	02.3	00.0	02.3
Speargun	93.8	00.0	06.6	00.0
Soma paka-paka	100.0	00.0	00.0	00.0
Soma roa	100.0	00.0	00.0	00.0
Soma rarape	75.0	00.0	25.0	00.0
Dodopa	100.0	00.0	00.0	00.0
Jala	100.0	00.0	00.0	00.0
Igi ambon	66.7	00.0	33.3	00.0
Bagan	100.0	00.0	00.0	00.0
Soma suntung	100.0	00.0	00.0	00.0
Soma tahago	100.0	00.0	00.0	00.0
Harpoon	100.0	00.0	00.0	00.0
Soma bodo	100.0	00.0	00.0	00.0
Soma pajeko	100.0	00.0	00.0	00.0
Purse seine (*giop*)	100.0	00.0	00.0	00.0
Igi for ornamentals	00.0	100.0	00.0	00.0
Pelagic long line (*palento*)	100.0	00.0	00.0	00.0
Soma sardine	00.0	00.0	100.0	00.0
Soma landra	100.0	00.0	00.0	00.0
Soma kalasi	100.0	00.0	00.0	00.0
Pancing suntung	100.0	00.0	00.0	00.0
Soma lolosi	100.0	00.0	00.0	00.0

Note: rows may sum to more than 100 due to rounding.

Women are much more represented in gleaning, fish trading and fish processing activities (Table 24) than in fish capture activities. Gleaning is dominated by adult females (44.4%), or females working together with adult males or young males (36.5%). This is quite different from Bentenan and Tumbak where the majority of gleaners are adult males (Pollnac, et al., 1997b). Young males, either alone or with adults, make up 14.3 percent of the gleaners followed by children working with adults (4.8%). Fish trading is dominated by adult males (60%) or adult males working with females (40%). This is in contrast to Bentenan and Tumbak where 67 percent and 53 percent of adult females are involved in fish trading respectively (Pollnac, et al., 1997b). Fish processing in Talise is dominated by females either working alone (57.1%) or with adult males (14.3 %). In contrast, in Bentenan and Tumbak, 0 percent and 17 percent respectively of females working alone are involved in fish processing (Pollnac, et al., 1997b).

Table 24. Percent distribution of labor by age and sex categories for gleaning, fish trading, and fish processing.

Sex and Age Status	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Gleaning				
Adult Male	04.0	16.7	05.0	07.9
Adult Female	40.0	55.6	40.0	44.4
Adult Male & Female	32.0	22.2	30.0	28.6
Adult Male & Children	04.0	00.0	00.0	01.6
Adult & Children	00.0	00.0	10.0	03.2
Young Male	00.0	00.0	05.0	01.6
Adult Female & Young Male	12.0	00.0	10.0	07.9
Adult & Young Male	08.0	05.6	00.0	04.8
Trading Fish				
Adult Male	100.0	00.0	50.0	60.0
Adult Male & Female	00.0	00.0	50.0	40.0
Fish Processing				
Adult Male	00.0	100.0	100.0	28.6
Adult Female	80.0	00.0	00.0	57.1
Adult Male & Female	20.0	00.0	00.0	14.3

2.5.4 Pearl Farming

A large scale pearl farm was started in Talise in the late 1980s with a total capital investment of approximately US$10 million (Badan Koordinasi Penanaman Modal No. 430/III/PMA/1997). The lease area of the farm includes the entire sea area between the islands of Bangka, Gangga, Lehaga and Talise, totaling approximately 10,000 hectares. The total area farmed within this lease area however, is only 422 hectares. There is an area of approximately 77 hectares to the north of Kinabohutan Island and a larger area to the south totaling 345 hectares (Kusen, et al., 1998). The shore based facilities are located south of Dusun 1 and are within a short walking distance. The company started as a joint venture with a local firm but is now totally owned by the Japanese firm of Horiguchi Pearl Co. Ltd.

Pearl farming is an important source of employment and income in Talise. Pearl farming is the second highest percentage of first-ranked productive activities in Dusun 1, just slightly behind coconut climbing (22 % and 24 % respectively). Dusun 1 has the highest percentage of household survey respondents who ranked pearl farming as their primary productive activity (Table 25) compared to Dusuns 2 and 3 (9 % and 5 % respectively). Pearl farming was always ranked first, indicating the high level of importance of this type of employment to households engaged in this activity.

Table 25. Percent distribution of rank importance of pearl farming.

Rank	Percent			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
1	22	09	05	10

Table 26 provides a breakdown of pearl farming employment by sex and age. Pearl farming is conducted primarily by adult males (69.2 %) but also employs a number of women (30.8 %). Women pearl farm workers (among survey respondents) come only from Dusuns 1 or 2.

Table 26. Percent distribution of labor by age and sex categories for pearl farming.

Sex and Age Status	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Pearl Farming				
Adult Male	57.1	75.0	100.0	69.2
Adult Female	14.3	00.0	00.0	7.7
Adult Female & Young Female	28.6	25.0	00.0	23.1

The household survey asked respondents what impact the pearl farm has had on people in their community. Over one third of the respondents said it hurt or was not good (37.1 %), slightly less than one-third (31.7 %) said it had no impact, and about one-quarter (25.9 %) said it helped. The breakdown of these responses shows large differences in how the three dusuns perceive the impacts (Table 27). Dusun 3 has a much higher percentage of respondents who say it hurts, compared to Dusuns 1 or 2, and these differences are statistically significant (Dusun 1 & 3 Chi square = 26.230, df = 1, p, .001; Dusun 2 & 3 Chi square = 33.868, df = 1, p = 0). Similarly, the considerably lower percentage of respondents in Dusun 3 who say the pearl farm helps, compared to Dusuns 1 or 2, is also statistically significant (Dusun 1 & 3 Chi square = 19.291, df = 1, p = 0; Dusun 2 & 3 Chi square = 8.481, df = 1, p = 0). Dusun 2 has the highest percentage of respondents who say it has no impact.

Table 27. Percent distribution of responses concerning the impact of the pearl farm company.

Impact	Dusun 1	Dusun 2	Dusun 3	All Dusuns	N
Hurt	21.6	15.7	62.5	34.4	77
No impact	23.0	50.0	23.8	31.7	71
Help	40.5	28.6	10.0	25.9	58
Help and hurt	05.4	05.7	02.5	04.5	10
No impact and help	01.4	00.0	00.0	0.50	1
Don't know	01.4	00.0	00.0	0.50	1
Not good	06.8	00.0	01.3	02.7	6

The question that arises from this data is why do residents in Dusun 3 perceive the pearl farm so much more negatively than the other dusuns? Key informants on Kinabohutan Island have stated that the pearl farming areas were previously prime fishing grounds for many of the fishers on the island, particularly for pelagic species of fish caught with purse seines and lift bag nets. Once the pearl farm was established, these areas (inside and within 50 meters of the farming areas) were made off limits to fishing by the pearl farm and strictly enforced by security guards. When asked the reasons for the impact of the pearl farm, the most frequently stated response was "catch fish further away" (see Appendix II). There also have been reports of fishers being caught and physically beaten by the security guards. There was one incident in particular where an old man was beaten right on the beach in Kinabohutan, and which was observed by many residents. It is the story most frequently recounted. The loss of fishing grounds, rough treatment by the security guards (although not mentioned in the survey responses of reasons for pearl farm impact), in addition to Kinabohutan having the fewest

number of persons employed by the pearl farm, are most likely the primary reasons for the negative impression. Whenever this topic is brought up, it is clear that residents of Kinabohutan are angry over the loss of fishing grounds and their takeover by the pearl farming company.

Since loss of a nearby fishing ground was mentioned as the most frequent response to the pearl farm impact, occupational category was cross-tabulated with hurt responses to the impact question. Three categories of occupations were developed: fisher, farmer, and fisher-farmer. A person was categorized as fisher if he ranked fishing as first or second rank of productive activities. A person was classified as a farmer if farming was a first or second ranked activity. A person was classified a fisher-farmer if both fishing and farming were a first or second ranked activity. Surprisingly, none of these three occupational categories are significantly related to the "hurt" response (Hurt-Fisher Chi square = 3.569, df = 1, $p > .05$; Hurt-Farmer Chi square = .076, df = 1, $p > .05$; Hurt-Fisher-Farmer Chi square = 1.195, df = 1, $p > .05$). This indicates that the negative perceptions towards the pearl farm are not linked to occupational category. This is also true in comparing only respondents who answered hurt in Dusun 3 by these three occupational categories (Hurt-Fisher Chi square = 0.029, df = 1, $p > .05$; Hurt-Farmer Chi square = 0.444, df = 1, $p > .05$; Hurt-Fisher-Farmer Chi square = 0.000, df = 1, $p = 1$).

2.5.5 Forestry

The higher elevations and steep hillsides on the eastern side of Talise are covered in forest. Residents report that the forests contain numerous species of wildlife including black macaque monkeys, deer, boas, assorted bird life and bats. They also report that the endangered maleo bird used to be found on Talise, and that on occasion, deer are seen swimming between Talise and Bangka Island. Deer, monkeys, and bats, although protected, are hunted by outsiders, often with assistance from local residents. Commercial species of trees used locally for boat building and house construction, and ebony, are present in the forest but their abundance is declining. During the period of 1994 to 1998, forest area on the entire island (the villages of Talise and Aerbanua) declined from 959 hectares to 533 hectares, a loss of 56 percent in a four year period (Kusen, et al., 1999). Most of the forest trees are of small size indicating the forest is heavily exploited. At the current rates of forest loss and exploitation, the forest and associated wildlife will disappear within five years (Lee, 1999).

While residents of Talise village exploit forest resources, a large number of residents from the western side of Talise Island, in the village of Aerbanua, also utilize them. Forest resources are used for food and firewood. Additionally, lumber is used for houses, furniture and boat construction. Not all of the lumber is utilized locally and some lumber is occasionally cut and transported off the island for people from outside Talise. Small farm plots are located in and/or on the edge of the forest. Residents report substantial crop damage from wildlife (monkeys). While residents are concerned about preserving the forest resources, land tenure issues will make this task difficult (Lee, 1999).

2.5.6 Other Miscellaneous Activities

Sand mining: There are two types of sand mining in Talise. Offshore sand mining was conducted in 1998 by a company constructing a hotel south of Manado. This sand was mined just offshore from Kinabohutan through a permit issued by the provincial authorities. This area was mined as pure white sand was needed for an artificial lagoon and beach constructed along the shoreline of the hotel. It should be noted that residents report that Kinabohutan Island is experiencing erosion of its beaches on all sides. It is uncertain what the impact of this offshore mining is, but many people are fearful it may exacerbate the erosion problem. The pearl farm mines sand from beaches on Talise for use on the anchoring system for the pearl farms. Sand is placed in bags, and then several of these sand bags are used for each anchor. As these anchors are placed in deep water and are used to anchor fairly large hanging structures, a considerable amount of sand is used. The anchors are periodically lost and therefore are constantly being replaced. To our knowledge, no permit for sand mining has been issued to the pearl farm.

Coral mining: Coral mining does occur in Talise for limited purposes such as construction of housing foundations and septic systems. The amount mined seems to be more limited than Bentenan and Tumbak as abundant land-based rock supplies are available on Talise Island and along certain portions of the shoreline.

Mangrove cutting: Mangrove stands along the shoreline are cut for firewood and some construction purposes. Residents of Kinabohutan have reported that natural regeneration and replanting of mangroves around the offshore mangrove stand to the southwest of the island have been unsuccessful as goats eat the small mangrove seedlings at low tide. Officials in Dusun 2 report that the mangrove stand within the small estuary is "protected" and residents are not allowed to cut these mangroves. There is however, no official local ordinance prohibiting mangrove cutting here.

Drinking water supply: Potable drinking water supply is a major problem on Kinabohutan Island as exhibited by the 1997 outbreak of *munthaber* (severe diarrhea) which resulted in two deaths and the need for the local health service to send a special medical team into the community to control the outbreak and chlorinate the wells. Only two shallow wells on the island supply fresh water for drinking purposes for this community of 906 persons living on an island of only 60 hectares in size. However, these wells are slightly brackish. The other wells on the island, many with wooden or galvanized sheet metal walls, are used for bathing and washing clothes. Dusun 1 has several wells used for drinking water supply and which are often used by persons experiencing drinking water shortages from other islands such as Kinabohutan and other neighboring islands. The beach resort on Lehaga Island obtains fresh water supply from the springs in Dusun 1. While the springs did not dry up during the 1997 El Nino as they did in Bentanan, supply diminished considerably. The water systems which tap the springs are old and in need of repair. Dusun 2 relies solely on wells for its water supply, most of which have drinkable water.

Handicrafts: After attending a study tour on tourism in Manado and Bunaken which was conducted by Proyek Pesisir, one resident on Kinabohutan established a home handicraft industry based on shell craft. Shells were collected locally from the beaches and converted into animal and other designs. Models of local boats and homes were also carved from wood collected on Talise Island. These products were sold to a handicraft store in Manado. The

person who started this business has since moved to Manado. Another handicraft home business has been ongoing by a local artist living in Dusun 2. He produces local art designs for hanging on walls that are made almost entirely out of various parts of the coconut tree. These products are sold to handicraft outlets in Manado.

2.6 PERCEPTIONS OF RESOURCE IMPACTS ON HUMAN ACTIVITIES

It is essential to understand perceptions of individuals concerning impacts of human activities on the condition and state of coastal resources and the environment. Knowledge of what perceptions may be faulty as well as accurate can then be used to structure interventions directed at involving the community in the management of resources. Such knowledge is particularly useful in considering content and topics for public education activities.

Survey respondents were asked to reply as to their level of agreement with ten statements concerning some aspect of relationships between coastal resources and human activities. The following ten statements were used:

1. We have to take care of the land and sea or it will not provide for us in the future.
2. Fishing would be better if we cleared the coral where the fish hide from us.
3. If our community works together we will be able to protect our resources.
4. Farming in the hills can have an effect on the fish.
5. If we throw our garbage on the beach, the ocean takes it away and it causes no harm.
6. We do not have to worry about the land and sea; God will take care of it for us.
7. There is a limit to the amount of seaweed farming that can be done in this area.
8. Unless mangroves are protected, we will not have any small fish to catch.
9. There are so many fish in the ocean that no matter how many we catch, there will always be enough for our needs.
10. Human activities do not influence the number of fish in the ocean.

The statements were arranged so as to limit interference between similar statements (e.g. statements number 9 and 10 were separated by several other statements). Agreement with some indicates an accurate belief while agreement with others would indicate an inaccurate belief. This was done purposely to control for responses where someone may agree or disagree with all of the statements. Statements were randomly arranged for this type of polarity. These questions were asked of the head of the household and their spouse separately. Respondents were first asked to agree, disagree or to respond, “don’t know” (neutral). If they indicated either agree or disagree, they were then asked if they agree/disagree strongly, agree/ disagree, or agree/disagree a little with the statement. This resulted in a scale with a range of from one to seven. Polarity of the statements was accounted for in the coding process, so a score value changes from one to seven indicating an increasingly stronger and accurate belief concerning the content of the statement.

The mean scale values for each statement are provided in Table 28 and broken down by dusun. Since the ranking for each statement results in ordinal data, care needs to be taken in using only the mean score values to interpret the data. Frequency distributions by dusun and for all dusuns are provided in Appendix III for a more detailed examination of responses to these statements. The mean scale value provides a simplified view of where the community has an accurate or inaccurate perception concerning the contents of each statement. Many of the statements, however, show bi-modal or multi- modal distributions (e.g. statements 4, 7,

and 10; see Appendix III Tables A.III.1 and A.III.2). In these cases, while a large number of respondents may have accurate responses, a large number of respondents also may have inaccurate responses. In such cases, understanding more fully whether there are sub-groups that tend to have more inaccurate perceptions than others could greatly assist in targeting public education activities to those who need it most, and narrow the emphasis of the message on areas where understanding of the relationships between human activities and impact on the environment is weakest.

Table 28. Mean scale values for each dusun in Talise.

Statement Number	Mean Scale Value			
	Dusun 1	Dusun 2	Dusun 3	All Dusuns
1	6.2	5.9	6.1	6.1
2	5.3	5.6	5.6	5.6
3	6.2	5.8	6.2	6.1
4	3.8	3.3	3.3	3.5
5	4.9	4.1	4.5	4.5
6	4.9	4.7	4.4	4.5
7	5.4	5.3	5.2	5.3
8	6.1	6.0	5.7	6.0
9	2.7	2.7	2.4	2.6
10	3.5	3.4	3.1	3.4
N	74	70	80	224

The mean scale values show a fairly consistent score across dusuns. The lowest scores among the ten statements tend to be in two areas, and are similar to results of the survey conducted in Bentenan and Tumbak (Pollnac et al., 1997b). Firstly, Statements 9 and 10 both refer to the concept that fisheries resources are limited and can be subject to overfishing. Respondents tended to answer these statements incorrectly. Since the condition of the coastal resources in Talise are still good and fishing still favorable as well, the problem of overfishing does not yet seem to be a major problem for these communities. However, by educating these communities now about the concept of overfishing, it may make it easier to institute management measures in the future. The fish census survey data (Kusen, et. al., 1999) has shown that reef-related commercial species are not in widespread abundance, and many of the reef-related species (groupers, snappers) are sold to seafood restaurants in Manado. The expanding tourism sector and an increasingly affluent population in this city center will increase fishing pressure on these varieties and will eventually lead to overfishing. By educating the community now, potential restrictions such as size limits and closed areas may be more palatable to fishers in the future or could be instituted before they result in severe catch and income impacts on fishers.

The other area where respondents tended to have inaccurate perceptions was on statement number 4, pertaining to the relationship of upland activities to impacts on the sea. Clearly more education is needed here on the impacts of farming the steep hillsides of Talise and the cutting of the forest, that results in increasing silt and sediments that can kill coral and therefore reduce reef-related fisheries. The marine impact of too many pesticides and fertilizers used in some farming practices, also needs to be explained. While many respondents have a favorable perception towards throwing garbage on the beach (statement 5),

there are still a large number of residents who ranked this on the lower (inaccurate) end of the scale (A favorable perception in this case meant many people did not agree with the statement and therefore disagreement was coded opposite on the scale, where a high value means they did not agree.). A very similar distribution and mean scale value is found for the perception of God's influence (statement number 6).

The high mean scale values on statements 2 and 8 demonstrate that most residents tend to have a correct understanding of the importance of mangrove and coral habitat on fish production. This is also exhibited by the protection provided to the mangroves in the small estuary of Dusun 2, and the apparent absence of bomb fishing in the area. The Kepala Desa has reported that protecting the mangroves and corals has been a theme he has often reinforced with residents as well.

Survey respondents were also asked questions concerning bomb fishing, a destructive fishing technique widely practiced in the Minahasa region. First, they were asked why people fish with bombs. The majority of the first reasons given was "do not know," followed by "easy and quick way to catch fish," "catch more fish and more quickly" and "easier and quick way to get money" (see Appendix IV). Only two respondents gave the first or second reason that people bomb as "not aware of the government regulation yet." Clearly, most people feel the efficiency of the technique and profitability seem to be the main factors driving its use. Interestingly, slightly fewer respondents in Dusun 3, where fishing is more widely practiced, seem to think the technique catches more fish, compared to Dusuns 1 and 2.

Respondents were then asked whether bomb fishing harms the ocean. An overwhelming majority (84.8 percent for all dusuns combined, Dusun 1 - 79.7%, Dusun 2 - 90.05, Dusun 3 - 85.0%) said yes, it harms the ocean, while 13.4 percent said they did not know. Only 1.8 percent of respondents (4 persons) said they did not think it harmed the ocean. Once again, these responses seem to reinforce the tendency of Talise residents to have a high conservation awareness when it comes to protecting marine habitats and avoiding the use of destructive fishing techniques.

2.7 PERCEIVED QUALITY OF LIFE AND PROBLEMS

As a means of determining how individuals in the village evaluate their quality of life, they were asked to compare their household well-being today compared to five years ago (better, worse, the same, don't know). They were then asked an open-ended question about the reasons for this perceived change (Details concerning responses to the open-ended question of reasons for change are provided in Appendix V.). A comparison of how individuals answered the question concerning their well-being today compared to 5 years ago is provided in Table 29. A majority of residents (53.6 %) felt they are better off compared to five years ago, and only 18.3 percent felt they are worse off. About one-quarter (25.9 %) felt they are about the same. There are differences in how each dusun answered this question. Dusun 3 had the lowest percentage who said they were better off (48.8 %), and the highest percentage who said they are worse off (22.5 %) compared to Dusuns 2 and 3. Dusun 1 had the highest percentages of those who felt they were better off and the lowest percentage who said they were worse off. Dusun 2 falls between Dusuns 1 and 3 in these categories. These data suggest that Dusun 1 may have a slightly more positive perception towards their well-being today compared to the past while Dusun 3 may have a slightly more negative perception. None of these differences however, are statistically significant (Worse off: Dusun 1&2 - Chi square = 1.647, $p>.05$;

Dusun 1&3 -Chi square = 2.841, p > .05; Dusun 2&3 - Chi square = 0.139, p>.05; Better off: Dusun 1&2 - Chi square = 0.637, p>.05; Dusun 1&3 -Chi square = 1.774, p > .05; Dusun 2&3 - Chi square = 0.252, p>.05).

Table 29. Percent distribution of responses concerning household well-being compared to five years ago.

Response	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Worse off	12.2	20.0	22.5	18.3
Same	27.0	24.3	26.3	25.9
Better off	59.5	52.9	48.8	53.6
Don't know	1.4	2.9	2.5	2.2
N	74	70	80	224

When asked the reasons for these changes, the most frequent first response (see Appendix V) given was "increased income," followed by "income still the same," "occupation," "decreased income," "catching fish is more difficult now," and "unstable income." Dusun 1 was more likely to cite increased income and less likely to cite decreased income or occupation compared to Dusuns 2 and 3. Dusun 3 was much more likely to cite "catching fish is more difficult now" than the other dusuns.

Dusun 3 has the highest percentage of residents relying on fishing for part of their livelihoods reach (Dusun 3-85%, Dusun 2-66%, Dusun 1-54%) (Dusun 1-54%, Dusun 2-66%, Dusun 3-85%) and had more frequent responses to their problems as "harder to catch fish" (Dusun 3-20%, Dusun 2-1%, Dusun 1-8%; see Appendix V, tables A.V.3, A.V.4 and A.V.5). Combining the first, second and third reasons given of problems, the "harder to catch fish" response for Dusun 3 compared with either Dusun 1 or 2 is statistically significant (Dusun 2&3 Chi-square = 4.440, p<.05; Dusun 1&3 Chi square = 12.212, p<.001). The loss of fishing grounds due to the establishment of the pearl farm seems to factor into these responses concerning quality of life and problems. Interestingly, while ownership of land was rarely mentioned as a reason for changes in well-being, it was much more frequently cited as a problem (see Appendix V, tables A.V.3 and A.V.4), particularly among residents of Dusun 1 and 3.

Respondents were also asked how they expect their household well-being to be five years from now (better, worse, the same or don't know). The responses, broken down by dusun, are provided in Table 30. A majority of respondents (54 %) feel they will be better off in the future, and this is almost equal to the percentage of respondents who said they are better off today compared to five years ago (53.6% - see Table 29). A very small percentage feel they will be worse off five years from now (4%), which is a smaller percentage of respondents who feel they are worse off now compared to five years ago (18.3 % - see Table 29). A large percentage of respondents when asked about the future however, said they "don't know." Overall, this indicates a generally favorable perception of the community towards their future well-being, but with the caveat that there is also a substantial feeling of uncertainty. Dusun 3 has the largest percentage of respondents who have a negative perception towards their future well-being compared to Dusuns 1 and 2. Low cell frequencies (less than 5) frequencies did not allow statistical differences to be tested using Chi square. This is similar to the perception of current well-being compared to five years ago (Table 29), where Dusun 3 also had the

highest percentage of "worse off" responses. The differences between dusuns in the "better off" category of responses to future well being are not statistically different (Dusun 1&2 - Chi square = 1.065, p>.05; Dusun 1&3 - Chi square = 0.217, p >.05; Dusun 2&3 - Chi square = 0.352, p>.05).

Table 30. Percent distribution of responses concerning household well-being today compared to five years in the future.

Response	Dusun 1	Dusun 2	Dusun 3	All Dusuns
Worse off	4.1	0.0	7.5	4.0
Same	9.5	8.6	6.3	8.0
Better off	50.0	58.6	53.8	54.0
Don't know	36.5	32.9	32.5	33.9
N	74	70	80	224

Survey respondents were also asked an open-ended question about what they feel are the most important problems facing them and their families. Lack of facilities was the most frequently given first reason, followed closely by decreased income (Table A.V.3). The second most frequent group of responses included health, daily needs not enough, and weather. These responses may reflect some of the effects of the El Nino drought that was at its height at the time of this survey. The health response may also reflect the dependence on shallow wells for drinking water supply in Dusun 2 and 3. The third most frequent group of responses was: no problems, lack of capital, harder to catch fish, land ownership, occupation and education. Lack of facilities also topped the list of most frequently given second reason for problems (Table A.V.4). From this list of problems, improvements in infrastructure, income generating projects, as well as improved health facilities and services would tend to be the type of development activities which may be most favored by residents and which would address what they see as their greatest problems.

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APPENDIX I.

ANALYSIS OF MATERIAL STYLE OF LIFE VARIABLES

There were 28 Material Style of Life Measures in the survey questionnaire, from which 27 are listed in Table 8. One item was omitted (tile roof) as no households had this item. These 27 items were factor analyzed using the principal component analysis technique and varimax rotation. Scree plots were used to determine the optimum number of factors to be rotated. Several iterations were conducted and variables that had very low frequencies within the data set (one respondent) or which had rotated loadings of less than 0.30 were eliminated from the analysis. Items eliminated included wooden walls, wooden floors, tile floors, waterpipe into house, refrigerator, and fan. The results of the final analysis are found in Table A.I.1.

Table A.I.1. Principal component analysis of Material Style of Life items for Talise.

Material Style of Life Items	Component	
	Household Structure	Household Possessions
Bamboo walls	**-0.815**	-0.140
Concrete walls	**0.748**	0.361
Earthen floors	**-0.794**	-0.062
Concrete floors	**0.740**	0.299
Nipa roofs	**-0.862**	-0.113
Metal roofs	**0.771**	0.291
Open window holes	**-0.662**	-0.032
Glass windows	**0.705**	0.390
Electricity	**0.507**	0.346
Wooden roofs	0.163	**-0.379**
Wooden shutters	-0.221	**-0.415**
Indoor toilet	0.211	**0.491**
Living room set	0.383	**0.476**
Chairs	0.114	**0.429**
Benches	-0.148	**-0.322**
Cabinet	0.340	**0.563**
Cupboard	0.160	**0.579**
Radio cassette player	0.132	**0.525**
Television	0.237	**0.588**
Parabolic satellite antenna	0.101	**0.455**
Modern stove	0.051	**0.580**
Total Variance (%)	26.005	16.675

The majority of items loading highest (in bold) on each of the two components in the table provide some indication of the interrelationships of the items in the sample households. These patterns can be interpreted as "dimensions" of Material Style of Life. For example, items loading highest (either negative or positive) on the first component (labeled Household Structure) refer to the structural features of the household (e.g. wall, floor, window and roof type), therefore, this component was labeled Household Structure. Similarly, items loading highest on the second component (labeled Household Possessions) are items contained within

the household such as furniture and appliances. This component therefore was labeled Household Possessions. These two components together account for 43 percent of the variance in the data set.

Component scores (standardized) which represent the position of each individual household for each of the two components were calculated. These component scores were then used to analyze differences between dusuns within the village (see Section 2.4.4, Table 9, in the main body of the report).

APPENDIX II.

ANALYSIS OF REASONS FOR IMPACT OF THE PEARL FARM

This appendix presents the analysis of the open-ended question pertaining to why the pearl farm has had an impact on the people in the village (hurt, help, no impact, don't know etc.). Further discussion is provided in the text of this report. The raw data for the reasons for changes in household well-being include over 43 distinct responses. For purposes of analysis, these responses are grouped into 14 different categories used in tables A.V.1 and A.V.2. The responses are cross tabulated with dusun to examine any differences between villages.

Table A.II.1. Reasons for impact of the company cross tabulated with dusun (reason number 1).

FREQUENCIES				
Dusun 1	Dusun 2	Dusun 3	All Dusuns	REASON
18	10	49	77	Catch fish further away
33	20	7	60	Can work at pearl farm
11	27	9	47	Don't have any relationship with the company
5	2	7	14	Don't know
0	2	0	2	Sell fish at pearl farm company
1	0	0	1	Company rents boat
0	0	1	1	Famous with marine culture
0	1	0	1	Pearl farm expanding their area to Dusun 2
0	0	1	1	Don't know the process to make pearls
1	0	0	1	No prospect
1	0	0	1	Get clothes annually

Table A.II.2. Reasons for impact of the pearl farm company cross tabulated with dusun (reason number 2).

FREQUENCIES				
Dusun 1	Dusun 2	Dusun 3	All Dusuns	REASON
5	1	16	22	Catch fish further away
2	3	0	5	Can work at pearl farm
1	3	0	4	Don't have any relationship with the company
0	0	1	1	Sea transportation lines are becoming smaller
1	0	0	1	Salary too small at pearl farming company
1	0	0	1	Get food annually

APPENDIX III.

ANALYSIS OF BELIEFS CONCERNING RELATIONSHIPS BETWEEN COASTAL RESOURCES AND HUMAN ACTIVITIES

The percent distribution of scale values for each dusun and for all dusuns combined are provided in the tables A.III.1 and A.III.2 below. This ordinal data does not have normal frequency distributions. The scale frequency distributions for each statement vary; some are skewed to the right, some are skewed to the left and others show a bi-modal distribution. For this reason, the mean value reported in Table 26 to examine variations in scale values between dusuns and between statements must be used with caution. The detailed frequencies are provided below so that the distributions for each statement can be seen in more detail.

A scale value of four is for a response of "don't know." By ignoring this scale value, some of the difficulties interpreting bi-modal distributions are reduced. However, some distributions still show bi-modal distributions. For example, in Table A.III.2, statement number 4 for all dusuns (pertaining to impacts of hillside farming on the ocean) has a low mean scale value (3.5) with a small mode to the right (11.2 % for scale value = 6), and a large mode to the left (40.6 percent for scale value = 2). Therefore, while a large proportion of respondents still have the wrong perception that farming has no impact on marine resources, a number of respondents did respond correctly to this statement. By relying on the mean values only, this important information is lost. Interestingly, for statement 4 (see table A.III.1), it is bi-modal for each dusun but shows a much stronger mode on the correct end of the scale (21.6 percent for scale value = 6) in Dusun 1 than for Dusuns 2 and 3, as well as a large mode on the incorrect end of the scale. Dusun 1 has very steep hills and therefore might be expected to observe the linkage of sedimentation and siltation impacts from farming on marine resources such as the adjacent fringing coral reefs. Statement number 10 (pertaining to the influence of human activities on the number of fish in the ocean) which has a low mean scale value (incorrect perception) also shows a similar bi-model distribution.

For statements 4 and 10 where bi-model distributions exist on either end of the scale, there are large numbers of respondents who have correct perceptions of resource impacts from human activities as well as a large proportion who do not have correct perceptions. Understanding which groups of respondents have incorrect versus correct perceptions could help better target public education activities to those who most need it. Further analysis would be needed to determine if there are correlations between community sub-groups and misperceptions towards human impacts on marine resources.

Table A.III.1. Percent distribution of scale values for each dusun in Talise.

Statement Number	Scale Value						
	Dusun 1						
	1	2	3	4	5	6	7
1	00.0	00.0	01.4	01.4	04.1	62.1	31.1
2	00.0	13.5	02.7	01.4	06.8	40.5	35.1
3	00.0	01.4	01.4	02.7	00.0	58.1	36.5
4	04.1	35.1	00.0	29.7	02.7	21.6	06.8
5	06.8	18.9	02.7	01.4	06.8	50.0	13.5
6	00.0	29.7	05.4	10.8	04.0	40.5	09.5
7	31.1	05.4	02.7	17.6	02.7	68.9	02.7
8	00.0	01.4	00.0	06.8	01.4	59.5	31.1
9	05.4	63.5	08.1	06.8	04.1	12.2	00.0
10	04.4	41.9	05.4	28.4	04.1	17.6	01.4
Statement	*Dusun 2*						
Number	1	2	3	4	5	6	7
1	02.9	00.0	00.0	04.3	04.3	74.3	14.3
2	00.0	04.3	12.9	01.4	02.9	61.4	17.1
3	02.9	02.9	00.0	02.9	05.7	67.1	18.6
4	01.2	41.4	04.3	38.6	07.1	07.1	00.0
5	17.1	22.9	02.9	01.4	02.9	47.1	05.7
6	01.4	17.1	12.9	05.7	07.1	55.7	00.0
7	14.3	05.7	04.3	12.9	05.7	70.0	01.4
8	01.4	00.0	04.3	02.9	00.0	65.7	25.7
9	07.1	58.6	11.4	10.0	05.7	05.7	01.4
10	07.1	41.4	07.1	15.7	04.3	24.3	00.0
Statement	*Dusun 3*						
Number	1	2	3	4	5	6	7
1	00.0	02.5	00.0	07.5	01.3	51.3	37.5
2	03.8	05.0	01.3	15.0	03.8	40.0	31.3
3	00.0	01.3	00.0	05.0	03.8	51.3	38.8
4	02.5	45.0	03.8	37.5	01.3	05.0	05.0
5	02.5	27.5	06.3	12.5	01.3	31.2	18.8
6	00.0	32.5	06.3	11.3	05.0	31.3	13.8
7	37.5	08.8	03.8	22.5	00.0	52.5	12.5
8	00.0	06.3	00.0	11.3	00.0	58.8	23.8
9	15.0	62.5	05.0	08.8	02.5	06.3	00.0
10	11.3	40.0	05.0	26.3	01.3	13.8	02.5

Table A.III.2. Percent distribution of scale values for all dusuns in Talise.

Statement Number	Scale Value (All Dusuns)						
	1	2	3	4	5	6	7
1	0.9	0.9	0.4	04.5	03.1	62.1	28.1
2	01.3	07.6	05.4	06.3	04.5	46.9	28.1
3	0.9	01.8	0.4	03.6	03.1	58.5	31.7
4	02.7	40.6	02.7	35.3	03.6	11.2	04.0
5	08.5	23.2	04.0	05.4	03.6	42.4	12.9
6	0.4	26.8	08.0	09.4	05.4	42.0	08.0
7	28.1	06.7	03.6	17.9	02.7	63.4	05.8
8	0.4	02.7	01.3	07.1	0.4	61.1	26.8
9	09.4	61.6	08.0	08.5	04.0	08.0	04.0
10	06.7	41.1	05.8	23.7	03.1	18.3	01.3

APPENDIX IV.

ANALYSIS OF REASONS FOR BOMB FISHING

Reasons for bomb fishing are cross tabulated with dusun in Tables A.IV.1 and A.IV.2 below. The first table is a cross tabulation of the first reason provided to the open ended question of "Why do you feel some people still use bombs to catch fish?" The second table cross tabulates the second response provided, if any. The raw data for the reasons why people bomb fish include approximately 25 distinct responses. For purposes of analysis, these responses are grouped into 12 different categories used in tables A.IV.1 and A.IV.2.

Table A.IV.1. Reasons for using the bomb fishing technique cross tabulated with dusun (reason number 1).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	24	26	36	86	Do not know
	27	25	30	82	Easy and quick way to catch fish
	13	11	5	29	Catch more fish and quickly
	6	6	5	17	Easier and quicker way to get money
	0	0	1	1	No choice, they have to do it
	0	1	0	1	Habit
	1	0	0	1	They know how to make bomb
	1	0	0	1	Subsistence
	0	0	1	1	Don't know and don't want to know how to use other gears
	1	0	0	1	Brave, not afraid to die
	0	0	1	1	Not aware of government regulation yet
Total	73	69	78	220	

Table A.IV.2. Reasons for using the bomb fishing technique cross tabulated with dusun (reason number 2).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	0	0	2	2	Easier and quicker way to get money
	0	1	1	2	Brave, not afraid to die
	3	0	3	6	Catch more fish and quickly
	0	0	1	1	Not aware of government regulation yet
Total	3	1	7	11	

APPENDIX V.

ANALYSIS OF PERCEPTIONS OF WELL-BEING AND PROBLEMS

This appendix presents the analysis of several open-ended questions dealing with perceived changes over the last five years, reasons for the changes, and perceived problems. Statistical analysis of portions of this information as well as further discussion is provided in the text of this report. The raw data for the reasons for changes in household well-being include over 100 distinct responses. For purposes of analysis, these responses are grouped into 14 different categories used in tables A.V.1 and A.V.2. The responses are cross tabulated with dusun to examine any differences between villages.

Table A.V.1. Reasons for perceived changes cross tabulated with dusun (reason number 1).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	42	28	34	104	Increased income
	9	11	11	31	Income still same
	5	10	9	24	Occupation
	5	9	9	23	Decreased income
	3	1	11	15	Catching fish is more difficult now
	3	4	1	8	Unstable income
	4	2	1	7	No reason/don't know
	0	2	0	2	Health problems
	0	0	2	2	Climate and current
	1	0	0	1	The season is not so good for agriculture
	1	0	0	1	Money just enough for 1-2 days meal
	0	1	0	1	The ownership of land still not clear
Total	73	68	78	219	

Table A.V.2. Reasons for perceived changes cross tabulated with dusun (reason number 2).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	3	1	5	9	Increased income
	2	0	1	3	Occupation
	1	0	2	3	Improved infrastructure
	0	3	0	3	Health problems
	0	2	0	2	The ownership of land still not clear
	0	1	0	2	Decreased income
	0	1	0	1	Unstable income
	1	0	0	1	Salary is high but it is used mainly for transportation cost
	0	0	1	1	Catching fish is more difficult now
Total	7	8	10	25	

There were over 100 distinct responses to the open-ended question of, " What do you feel are the most important problems facing you and your family today?" These categories were grouped into 20 categories used in tables A.V.3, A.V.4 and A.V.5. The responses are cross tabulated with dusun to examine any differences between villages.

Table A.V.3. Perceived problems cross tabulated with dusun (first reason given).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	8	16	10	34	Lack of facilities (toilet, drinking water, electricity, house)
	11	9	10	30	Decreased income
	3	10	8	21	Health
	5	9	7	21	Daily needs is not enough
	8	4	8	20	Weather
	4	4	6	14	No problems
	4	6	4	14	Lack of capital
	3	0	10	13	Harder to catch fish
	5	1	7	13	Government still owns the land
	9	1	2	12	Occupation
	6	3	3	12	Education
	3	1	3	7	Don't know
	2	1	2	5	Unstable income
	2	1	0	3	Family problem
	0	1	0	1	Low land fertility
Total	74	67	80	221	

Table A.V.4. Perceived problems cross tabulated with dusun (second reason given).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	2	7	12	21	Lack of facilities (toilet, drinking water, electricity, house)
	3	3	2	8	Lack of capital
	2	0	3	5	Harder to catch fish
	1	5	2	6	Health
	2	0	5	7	Weather
	0	2	0	2	Education
	1	0	4	5	Government still owns the land
	2	1	0	3	Occupation
	1	0	0	1	Inflation
	1	2	0	3	Farming problem
	1	0	1	2	Marketing product problem
Total	16	21	29	66	

Table A.V.5. Perceived problems cross tabulated with dusun (third reason given).

	FREQUENCIES				REASON
	Dusun 1	Dusun 2	Dusun 3	All Dusuns	
	0	3	3	6	Lack of facilities (toilet, drinking water, electricity, house
	1	1	1	3	Harder to catch fish
	0	0	2	2	Daily needs is not enough
	0	1	1	2	Health
	0	0	1	1	Inflation
	0	1	0	1	Lack of capital
	0	0	1	1	Government still owns the land
	1	0	0	1	Raw material/wood difficult to find
	0	1	0	1	Weather
	0	1	0	1	Decreased income
Total	2	8	9	19	

APPENDIX VI.

SURVEY FORM AND ADMINISTRATION INSTRUCTIONS

FORMULIR WAWANCARA DATA AWAL
Desa Talise, 19-26 Agustus 1997
Nomor responden :……..……

***: lingkari jawaban yang tepat.**

1. Desa : . . . . . Dusun: . . . . Tanggal: . . . . . Pewancara : …….
2. Nama responden: …….. . Umur:. . . tahun (Lelaki /Perempuan)*

Komposisi penghuni rumah		Jumlah (orang)	Status (isteri, suami, kakak, kakek dll.)	Umur (tahun)
Laki-laki	Dewasa			
	Anak-anak			
Perempuan	Dewasa			
	Anak-anak			

BAGIAN PERTAMA

3 KEGIATAN PENANGKAPAN IKAN (Ya/Tidak)*

3.1 Perahu pertama, baik milik sendiri ataupun tempat kerja

Tipe perahu: ……. Ukuran Panjang: ……meter Lebar: …….meter
Motor: . . . . PK. Jumlah perahu: …… Milik sendiri: (Ya / Tidak)*

Perahu lainnya (baik milik sendiri maupun tempat bekerja)
Tipe perahu: ……. Ukuran Panjang: ……meter Lebar: …….meter
Motor: . . . . PK. Jumlah perahu: …… Milik sendiri: (Ya / Tidak)*

3.2 Alat tangkap, baik milik sendiri ataupun milik orang lain

#	Jenis alat tangkap[a]	Jumlah (buah)	Milik sendiri? Ya/Tdk	Yang bekerja				Peranan
				Lelaki		Perempuan		
				Dws	Anak	Dws	Anak	

a: nama teknis atau nama lokal;

Terangkan ukuran dan gambar semua alat-alat penangkap yang dipakai!

Urutkan 3 jenis ikan yang biasa tertangkap oleh masing-masing alat di atas:
Alat 1: a.. . . . . .b.……..c…….. . . . . .
Alat 2: a.. . . . . .b.……..c…….. . . . . .
Alat 3: a.. . . . . .b.……..c…….. . . . . .
Alat 4: a.. . . . . .b.……..c…….. . . . . .

4. KEGIATAN PENANGKAPAN NENER BANDENG (Ya-Tidak)*

#	Jumlah sere yg digunakan (buah)	Jumlah sere yang dimiliki sendiri	Yang bekerja?				Peranan
			Lelaki		Perempuan		
			Dws	Anak	Dws	Anak	

5. KEGIATAN BUDIDAYA RUMPUT LAUT (Ya-Tidak)* (1 depa = 1,60 meter)

#	Ukuran lahan laut		Jumlah tali ris (buah)	Panjang satu tali ris (meter)	Yang bekerja				Peranan
					Lelaki		Perempuan		
	Panjang (meter)	Lebar (meter)			Dws	Ank	Dws	Ank	

6. KEGIATAN MENGUMPUL HASIL LAUT DENGAN TANGAN/ALAT SEDERHANA (Ya - Tidak)*

Hasil laut (5 jenis terpenting)[a]	Jenis alat yang digunakan	Jumlah yang bekerja				Peranan
		Lelaki		Perempuan		
		Dws	Ank	Dws	Ank	

a: misalnya kerang, teripang, kimah, rumput laut dan lain-lain (sebutkan!).

7. KEGIATAN BELI-JUAL KOMODITI (Ya - Tidak)*

Jenis Komoditi	Jumlah yang bekerja				Peran	Jumlah penjual	Hubungan responden & penjual	Lokasi pembeli berikut	Hubungan responden & pembeli
	Lelaki		Permpuan						
	Dw	An	Dw	An					

Hubungan dagang antara penjual dengan responden.(a. Pembeli adalah pemilik alat; b.Pembeli membiayai operasi penangkapan c.Bayar hutang, d.Hubungan keluarga, e.dll)

8. KEGIATAN PENGOLAHAN (Ya-Tidak)*

Jenis Komoditi yang diolah	Alat yang digunakan untuk pengolahan	Yang bekerja				Peranan
		Lelaki		Perempuan		
		Dws	Ank	Dws	Ank	

9. KEGIATAN PERTANIAN (Ya-Tidak)*

Jenis tanaman	Luas lahan (Ha)	Milik Sendiri? Ya/Tidak	Alat pertanian yang digunakan	Yang bekerja				Peranan
				Lelaki		Perempuan		
				Dws	Ank	Dws	Ank	

10 KEGIATAN PRODUKTIF LAIN (Ya-Tidak)*

Jenis kegiatan lain	Alat yang dipakai	Milik Sendiri? Ya/Tidak	Yang bekerja				Peranan
			Lelaki		Peremp		
			Dws	Ank	Dws	Ank	

misalnya: menangkap ikan hias, ambil karang, turisme, tukang kayu, bikin kapal, guru, pegawai kantor, juga menerima kiriman barang/uang dari keluarganya di luar desa DAN LAIN-LAIN - sebutkan)

Urutan penting kegiatan di atas (**yang tercantum di nomor 10 saja**):
(1)……(2)……..……(3)
……(4)……..…….……(5)……
……(6)……..……(7)……
……(8)…… dst.
……..

11. DAFTAR KEGIATAN PRODUKTIF (beri tanda V jika dilakukan)

Semua kegiatan produktif yang dilakukan rumah-tangga (mulai nomor 3 hingga 10)

Tangkap ikan ( ), Tangkap nener ( ), Kumpul hasil laut dengan tangan ( ),
Budidaya rumput laut ( ), Beli-jual ikan ( ), Beli-jual nener ( ), Beli-jual rumput laut ( ),
Beli-jual komoditi lain-lain ( ) sebutkan: ……
Pengolahan ( ), Pertanian ( )
Kegiatan produktif lain-lain ( ) sebutkan: . .. . ……..

12. TINGKATAN KEGIATAN PRODUKTIF yang terdaftar di pertanyaan nomor 11 di atas terhadap makanan dan pendapatan penghuni rumah:

Ke-1: ……. Ke-2: ……..…
Ke-3: ……. Ke-4: ……..…… ….
Ke-5: ……. Ke-6: …….
Ke-7: ……. Ke-8:…….…….
Ke-9: …….

Catatan: pertanyaan diatas sebaiknya ditanyakan rangking terlebih dahulu kemudian kembali ke persentasi dari rangking kegiatan produktif.

BAGIAN KEDUA

13. INDIKATOR KEMAKMURAN RUMAH TANGGA

13.1 Keadaan bangunan rumah (Lingkari kondisi yang ada atau terlihat)

Bagian rumah	Bahan			
Dinding	Bambu	Kayu	Beton	
Lantai	Tanah	Beton	Kayu	Tegel
Atap	Nipa	Seng	Kayu	Genteng
Jendela	Terbuka	Papan	Kaca	

13.2. Fasilitas dan Perabot yang ada (Lingkari huruf yang sesuai; * garis bawah yang ada)

a. Listrik	h. Bangku kayu
b. Kipas Angin	i. Lemari Pajangan
c. Kulkas	j. Lemari
d. WC di dalam rumah	k. Radio Kaset
e. Air leding pribadi	l. Televisi (berwarna / hitam putih)*
f. Satu set kursi Tamu	m. Antena Parabola
g. Kursi (kayu / plastik)*	n. Memasak: (Kompor: Minyak-Gas-Listrik)/Kayu *

14. Tanah yang anda "miliki" digunakan untuk : (pilih dari peruntukan yang ada, jika jawabannya Ya, tanyakan pula status tanah tersebut)

a. Perumahan (Ya / Tidak)	**a b c d e f**
b. Pertanian (Ya / Tidak)	**a b c d e f**
c. Peternakan (Ya / Tidak)	**a b c d e f**
d. Tempat usaha Warung, Toko (Ya / Tidak)	**a b c d e f**
e. dan lain-lain……(Tulis kalau ada)	**a b c d e f**

Keterangan status tanah yang anda garap atau kerjakan.

a. Milik sendiri (Hak milik)
b. Hak guna pakai (ada izin)
c. Hak guna usaha (ada izin)
d. Sewa dari lain orang
e. lain-lain ……. (Tuliskan kalau ada)

Nomor responden: ……..(L - P)

BAGIAN KETIGA

PENJAJAKAN SIKAP INDIVIDUAL Nama responden : ……

Bagian ini harus ditanyakan secara terpisah pada suami dan istri dari satu rumah tangga responden.

15.1.Dibandingkan dengan 5 tahun yang lalu, apakah ekonomi rumah tangga sekarang merasa lebih baik atau lebih buruk?
Jawab: (Lebih baik / Lebih buruk / Sama-saja / Tidak-tahu)*
Mengapa? Alasan (1) ……..
(2) …….
(3) ……..dst. ……

15.2. Dalam 5 tahun ke depan, apakah ada kemungkinan keadaan hidup menjadi lebih baik atau tetap seperti sekarang?
Jawab: (Lebih baik / Tetap / Tidak-tahu)*

15.3 Saat ini masih ada sejumlah orang memakai bom untuk menangkap ikan. Menurut anda, mengapa mereka menggunakan bom? (1) ……..……
(2) ……. dst. (sebutkan) ……..……

15.4. Menurut anda apakah bom itu merusak lingkungan laut?
Jawab: (Ya / Tidak / Tidak tahu)*.

15.5 Masalah-masalah utama apa yang dirasakan paling sulit dihadapi oleh anda dan keluarga pada saat ini? (1) ……
(2) ……. (3) ….……
(4) ..…… (5) …….
(6) dst. ……

15.6 Menurut saudara apakah dengan adanya Perusahaan Budidaya Mutiara anda mendapat keuntungan, kerugian atau tidak ada pengaruhnya sama sekali pada masyarakat di desa anda ?
Jawab: (Menguntungkan / Merugikan / Tidak ada pengaruh)*. Mengapa.?
Alasan: (1) …… (2) ……
(3) …… (4) ……

Pertanyaan berikut ini untuk mengetahui apakah responden setuju atau tidak setuju. Apabila responden menjawab salah satu, tanyakan lagi tingkatan rasa setuju atau tidak setuju tersebut. Lingkari satu huruf yang tepat untuk setiap satu pernyataan.

Nomor responden: ……(L - P)

PENJAJAKAN SIKAP INDIVIDUAL

Nama responden : ……

Pernyataan:

1. Kegiatan manusia di laut tidak mempengaruhi keadaan jumlah ikan di dalam laut:
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

2. Apabila hutan bakau tidak di lindungi maka kita tidak dapat lagi menangkap ikan kecil-kecil.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

3. Kita harus perduli dan menjaga tanah dan laut, bila tidak maka tanah dan laut tidak akan menyediakan makanan bagi kita di kemudian hari.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

4. Membuang sampah ke pantai, akan dibawah arus ke laut dan tidak akan menimbulkan kerusakan lingkungan laut.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

5. Kita tidak perlu kuatir mengenai lingkungan udara dan laut, karena Tuhan akan merawat dan menjaganya
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

6. Apabila ada kerjasama dari masyarakat maka sumberdaya alam di sekitar desa dapat dijaga dan di lindungi.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

7. Menangkap ikan akan menjadi lebih mudah bila karang tempat hidup ikan di angkat dan di ambil habis.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

8. Perkebunan di perbukitan di belakang desa dapat mempengaruhi kehidupan ikan.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

9. Karena begitu banyak ikan di laut, maka berapa pun yang ditangkap, ikan akan tetap tersedia cukup bagi kebutuhan kita.
   a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

10. Luas budidaya rumput laut yang dapat dilakukan di desa ini terbatas.
    a) Sangat tidak setuju. b) tidak setuju. c) agak tidak setuju. d) tidak tahu. e) agak setuju. f) setuju. g) setuju sekali.

Apakah anda masuk anggota suatu serikat atau koperasi ? (Ya / Tidak)*
Bila Ya, serikat/ koperasi apa saja? ……
Apa maksud dari organisasi itu?…….
Pendidikan terakhir: …… Umur: ……. tahun Kelamin: (Lelaki/Perempuan)*
Suku …….. Agama : …….
Atas kesediaan memberikan jawaban atas pertanyaan tersebut di atas diucapkan banyak terima kasih.

Talise, Agustus 1997

PETUNJUK UNTUK MENGGUNAKAN FORMULIR WAWANCARA DATA AWAL RUMAH TANGGA MASYARAKAT DI DESA TALISE

INSTRUCTION FOR ADMINISTERING BASELINE INTERVIEW FORM FOR TALISE VILLAGE

UMUM Formulir wawancara ini dibuat untuk memperoleh keterangan dan seluk-beluk kegiatan produktif yang dilakukan seluruh anggota rumah-tangga (bagian pertama), kondisi rumah dan gaya hidup (bagian kedua) dan untuk mengetahui persepsi/pendapat/ cara pandang/sikap anggota rumah-tangga yang diwakili oleh seorang lelaki dewasa dan seorang wanita dewasa terhadap lingkungan hidup dan sumberdaya alam di sekitarnya (bagian ketiga). Keterangan bagian pertama akan mencerminkan hubungan mereka dan pentingnya sumberdaya alam bagi mereka. Formulir ini terdiri dari satu set pertanyaan untuk satu rumah-tangga dan dua set pertanyaan untuk seorang lelaki dewasa dan seorang perempuan dewasa.

GENERAL *This form is designed to obtain information on productive activities carried out by members of a household ('rumah-tangga') (section 1), house and life style (section 2), and to discover perceptions of households members represented by one adult male and one adult female (section 3). The section 1 reflects the dependence on and the importance of the natural coastal resources to the households. This form consists of a set of questions for the households and two sets of questions, each for the male and female representatives.*

'RUMAH-TANGGA' dalam formulir ini diartikan sebagai satu kelompok orang yang bersama-sama bernaung di dalam satu rumah. Definisi ini berarti bahwa siapapun yang berada di dalamnya adalah anggota rumah tangga. Anggota rumah-tangga ini biasanya tercantum dalam KARTU KELUARGA. Rumah-tangga dalam formulir ini TIDAK diartikan sebagai satu unit keluarga yang terdiri satu pasang suami-isteri dan anak-anaknya. Dengan demikian, didalam satu RUMAH-TANGGA bisa terdapat lebih dari satu pasang suami-isteri, sejumlah anak-anak dan keluarga lainnya, ataupun tanpa adanya pasangan suami-isteri.

'HOUSEHOLD' *in this form is defined as a unit of people who occupy a house. This means that anyone lives in the house is a member of the household. The members of household are usually registered on the household card ~ KARTU KELUARGA. In this form, a household does not necessarily consist of a married couple (husband & wife) and their children. Within a household, therefore, there may be more than one married couple, a number of children and other relatives, or no married couple at all.*

Dalam studi data awal (baseline study) ini ANGGOTA RUMAH-TANGGA dirinci dalam jumlah laki-laki dewasa, perempuan dewasa, laki-laki yang masih anak-anak dan perempuan yang masih anak-anak, yang menghuni satu rumah. Seorang anggota rumah-tangga dikelompokkan sebagai dewasa jika ia sudah berusia 17 tahun atau sudah menikah. Seorang anggota rumah-tangga dikelompokkan sebagai anak-anak jika ia berusia kurang dari 17 tahun. Pengelompokan ini dilakukan untuk menghindarkan kesalahpahaman dalam menentukan siapa yang terlibat dalam suatu kegiatan produktif rumah-tangga, karena bisa saja responden yang diwawancarai adalah seorang yang berusia 20 tahun tetapi dia berstatus anak dari sepasang orang yang lebih tua.

In this baseline study, members of a households are listed as the number of adult females, adult males, young females (girls) and young males (boys) live in a house. A member is classified an adult if his/her age is more than or equal to 17 years old or has been married. A member is classified as young if his/her age is less than 17 years old and not married. This classification is made to avoid confusion, as our respondent can be a person 20 years old who is the son of an older person. In bahasa Indonesia, the term 'son' can be mixed up with 'young boy'.

Dalam studi ini, kita tertarik untuk mengetahui kegiatan produktif yang dilakukan oleh seluruh anggota rumahtangga. Kegiatan produktif ini didefinisikan sebagai kegiatan apa saja yang ditujukan untuk menghasilkan pendapatan keluarga maupun sumber pemenuhan kebutuhan konsumsi (makanan). Untuk itu, kita perlu mengetahui informasi teknis dari anggota rumah-tangga yang secara khusus bekerja/terlibat dengan kegiatan produktif yang sedang kita teliti. Sebagai contoh, jika kepala rumah-tangga (seorang laki-laki dewasa) adalah nelayan dan seorang wanita dewasa adalah pengolah ikan dan penjual, kedua-duanya harus diwawancarai secara terpisah menurut kegiatan yang menjadi tanggungjawabnya. Perlu diingat bahwa sesuai dengan tujuannya, kita harus mengetahui bukan saja kegiatan produktif yang dilakukan oleh orang yang sedang kita wawancarai tetapi juga kegiatan produktif yang dilakukan oleh seluruh anggota lain. Dengan demikian, setelah wawancara kita dapat mengetahui kegiatan produktif apa yang dilakukan oleh rumah-tangga tersebut, siapa saja yang melakukannya, apa peranannya masing-masing, peralatan apa yang digunakan, siapa pemilik peralatan tersebut dan lain-lain, misalnya jenis komoditi atau jasa yang dilakukan.

In our study, we are interested in discovering all productive activities carried out by members of a household. The productive activity is defined as efforts or activities that generate income or food for the household. Therefore, we need to know technical information from persons who are responsible for such activities .For example, if the head of a household (an adult male) is a fisherman who catches scads and indian mackerel and an adult female practices fish trading, we should interview them separately according to type of activity. Please remember that according to our objectives, we have to know productive activities carried out by the person we interview but also we have to know what other members do to generate the income of the household. After the interview, therefore, we will know types of productive activities, who does them, their role in the activities, tools/equipment used in the activities etc., e.g. products or service they produce.

Jika di dalam satu rumah terdapat lebih dari satu pasang suami-isteri, pilih satu pasang yang mewakili rumahtangga untuk diwawancarai. Jangan lupa, kita tidak hanya menanyakan kegiatan produktif orang/pasangan yang diwawancarai, tetapi juga kegiatan anggota lain didalam rumah melalui orang tersebut. Jika tidak ada pasangan suami-isteri, tentukan anggota laki-laki dan wanita dewasa yang dapat mewakili.

*If within a house there are more than one married couple, select one couple to represent the household. Please don't forget that we ask about productive activities that are carried out not only **by** the representatives, but also by other members of the household through their representatives. If there is no married couple, select one adult male and one adult female to represent the household.*

KEGIATAN PRODUKTIF *PRODUCTIVE ACTIVITIES*

Dalam mendapatkan informasi kegiatan produktif yang dilakukan responden dan anggota lainnya, harus ditanyakan apakah ada orang lain di dalam rumah-tangganya melakukan kegiatan produktif seperti yang tercantum dalam formulir (nomor 3 hingga 11). Sebagai contoh, jika mereka tidak mengatakan mengumpulkan kerang atau menangkap ikan, tanyakan apakah mereka pernah melakukannya di pantai untuk keperluan makan. Coba selidiki lebih jauh karena orang cenderung mengabaikan kegiatan yang ditujukan untuk keperluan subsisten (misalnya makan sehari-hari) terutama dalam puncak musim ketika produksi sedang bagus.

In discovering the productive activities performed by the respondent and other household members, we should ask him/her if there is someone else in the household performing activities listed in the form (questions number 3 through 11). For example, if they collect mussels or catch table fish, ask him/her if they have ever done it on the coast for their food. Probe because people tend to ignore such subsistence activities, especially during the peak season of production.

Kegiatan produktif yang mungkin dilakukan oleh rumah-tangga masyarakt pesisir adalah sebagai berikut:

(1) Kegiatan penangkapan ikan konsumsi, biasanya berukuran relatif besar;
(2) Kegiatan penangkapan nener bandeng;
(3) Kegiatan budidaya rumput laut;
(4) Kegiatan mengumpulkan hasil laut dengan tangan/alat sederhana;
(5) Kegiatan jual beli komoditi;
(6) Kegiatan pengolahan komoditi;
(7) Kegiatan pertanian atau bercocok-tanam;
(8) Kegiatan produktif lainnya.

Productive activities that are probably carried out by households in coastal area are as follows:

(1) Fishing for table fish;
(2) Collection of milkfish fry;
(3) Seaweed farming;
(4) Gleaning marine biotas using hand/simple tools;
(5) Trading marine products or others;
(6) Processing marine products or others;
(7) Farming or horticulture;
(8) Other productive activities.

Kegiatan produktif lain meliputi kegiatan penyediaan produk komoditi maupun jasa. Contoh kegiatan lain pertama adalah penangkapan ikan hias, pengumpulan kayu bakau, peternakan mutiara, pertambakan udang, pertambakan ikan, pengumpulan batu karang dan lain-lain. Contoh kegiatan lain kedua adalah sebagai pegawai (negeri/swasta/restoran/buruh) seperti pelayan hotel/restoran, tukang kebun, penjaga keamanan, pemandu wisata, agen biro perjalan dan lain-lain (harap disebutkan), ataupun profesional seperti tukang cukur, tukang kayu, tukang bikin kapal/perahu, montir, guru, dokter dan lain-lain. Aktifitas ini harus merupakan kegiatan yang menghasilkan pendapatan atau makanan. Jika responden atau anggota keluarga lainnya bekerja dalam satu perusahaan/kantor tertentu catat nama majikannya. Kiriman uang/barang konsumsi dari keluarganya di luar desa dianggap sebagai kegiatan produktif karena memilik kontribusi terhadap pendapatan rumah-tangga. Harap ditanyakan kepada responden apah mereka menerima kiriman dari luar.

Other productive activities include provision of products and services. Examples of the first type of other activities are collection of ornamental fish, cutting and collection of mangrove woods, pearl culture, prawn farming, fish farming, coral mining, etc. Examples of the second type of other activities are working for someone else in providing service, e.g., public workers, factory labor, hotel/restaurant servant, travel bureau agent, or professionals such as barber, carpenter, boat builder, mechanic, teacher, medical doctor, etc. These activities should generate income. If our respondent or other household members work for someone/factory/office we should know who is his/her boss or the company. Remittance from relatives outside the village should be considered as a productive activity because it generates income for the household.

CARA PENGISIAN FORMULIR: ***GUIDANCE TO FILL IN THE FORM***

Semua pertanyaan harus dijawab; jika jawaban tidak terdapat dalam tempat yang disediakan di dalam formulir (yaitu jawaban kosong) berarti kita kehilangan keterangan. Jawaban angka nol (0) berbeda dari jawaban kosong! Nol menunjukkan kita memiliki data, sedangkan jawaban kosong menunjukkan kita tidak punya data.

All questions must be answered; unanswered questions (blank) means that we do not have the information or we do know nothing. An answer of null or zero (0) is different from an unanswered question! Zero indicates that we have an information while an empty space means we do not have the information.

Untuk setiap kegiatan produktif yang dilakukan, keterlibatan anggota rumah-tangga dalam kegiatan ini dicatat dengan cara merinci berapa orang laki-laki dewasa, perempuan dewasa, anak-anak lelaki dan anak-anak perempuan yang melakukannya. Jika salah satu kategori anggota rumah-tangga tidak terlibat, tuliskan angka nol dalam kolom yang relevan.

For each productive activity that the household performs, participation of household members should be noted by recording the total number of adult males, adult females, young males and young females involved. If no member category is involved, write down 0 in a relevant column.

Peranan setiap anggota yang terlibat harus diketahui. Untuk menjelaskan peranan setiap individu dalam kegiatan produktif rumahtangga catat semua kegiatan produktif yang mendukung sekecil apapun kegiatan tersebut. Sebagai contoh penangkap nener membawa hasil tangkapan pada anggota rumahtangga lainnya (isteri atau anak-anaknya) yang memisahkan nener dari ikan lain. Hal ini sangat jelas dan harus dicatat. Demikian juga dengan seorang suami yang memotong dan membawa kayu bakar untuk istrinya yang akan membuat ikan asap. Dalam hal ini kita sedang mencoba untuk menjelaskan hubungan saling ketergantungan di antara anggota keluarga sebagai satu unit produktif di dalam masyarakat yang bercirikan **pekerjaan ganda**. Informasi ini sangat penting.

The role of each household member involved must be recorded. To describe their roles in productive activities, record every activity, even if small in terms of contribution. For example, the milkfish fry collector brings the fry to other members who will separate the fry from the other fish. This is obvious and must be recorded. Another example, an adult male cuts and brings firewood for his wife who processes smoked fish. In this case we try to describe inter-dependent relationship among household members as a productive unit within a community which is characterized by ***occupational multiplicity****. This is an important information.*

BAGIAN PERTAMA: KEGIATAN PRODUKTIF RUMAH-TANGGA
SECTION 1: PRODUCTIVE ACTIVITES OF HOUSEHOLD

Kegiatan penangkapan ikan konsumsi (nomor 3) *Fishing table fish*

Kita perlu mengetahui perlengkapan yang digunakan dalam kegiatan penangkapan ikan. Untuk menangkap ikan konsumsi, umumnya nelayan menggunakan perahu/kapal dan alat tangkap. Seluruh perlengkapan yang digunakan ini perlu dicatat, baik milik sendiri maupun milik orang lain. Orang bisa saja menangkap ikan dengan cara bekerja sebagai buruh atau awak kapal milik seorang juragan/pengurus. Jika responden atau anggota rumah-tangganya bekerja sebagai awak kapal milik orang lain, maka tipe, ukuran (panjang & lebar), mesin/motor, dan jumlah perahu serta status pemilikan serta perlengkapannya harus dicatat. Demikian juga dengan alat-tangkap yang digunakan, jenis/tipe, jumlah dan status pemilikannya harus dicatat. Jika suatu rumah-tangga terlibat dalam dua jenis atau lebih kegiatan penangkapan ikan, catat juga masing-masing perahu/kapal dan peralatan yang digunakan untuk masing-masing jenis kegiatan.

We need to know the gear and equipment used in the fishing activity that is carried out by member of household. To catch table fish, fishermen usually use a fishing boat and fishing gear. All equipment/gear used must be recorded as well as whether he/she owns it or not. A person can catch fish by working for someone else as crew member on someone else's boat. If our respondent or other household members work on someone else's boat, we need to record type of boat, size of boat (length and breadth), its engine, number of boats of the same type they use, boat ownership and its equipment.

The same thing must be done for the fishing gear, i.e., type of gear, amount and ownership. If members of the household are involved in fishing with more than one boat, we must record details of the second boat and fishing gear.

Harap diingat kembali, bahwa kita bertujuan untuk memperoleh gambaran kegiatan produktif masyarakat di pantai selengkap mungkin. Gunakan logika/daya nalar dan rasa ingin tahu. Misalnya, jika anggota rumah-tangga mengatakan menggunakan ***soma roa*** dan ***paka-paka,*** tanyakan juga apakah mereka menggunakan alat tangkap jenis lain, misalnya jaring, perangkap, tali pancing. Karena jenis alat tangkap ini sangat beraneka, tanyakan jenisnya atau nama lokalnya (misalnya: igi Ambon, igi kapiting dll.). Jangan lupa membuat deskripsinya (gambar) dan mencatat dimensinya.

Please remember that our objective is to describe the productive activities performed by the coastal community. Use common sense and develop your curiosity. For example, if a member of household uses soma roa and paka-paka, ask if he/she uses nets, traps or hand-lines. Due to a high variety of fishing gear, please record the type of gear and its local name (for example: igi Ambon, iki kapiting etc.), Do not forget to make a description (drawing) and record its dimension.

Keterangan yang perlu diketahui mengenai deskripsi dan dimensi:
Details required for description of fishing gear and its dimension:

Jaring jenis gillnet: catat ukuran mata jaring (stretched mesh-size), panjang total dan dalam total. Jika responden melaporkannya dalam satuan pis (potong, ***piece***), tanyakan ukuran panjang dan dalam setiap jaring serta bagaimana mereka menata/menyusun jaring tersebut.
Gillnet: record stretched mesh-size, total length and depth. If respondent gives the dimension in terms of number of net pieces, ask him/her the size of each piece and how the nets are arranged.

Jenis seine net (pukat-kantong): catat panjang kantong (meter) dan panjang total (meter) dari keseluruhan pukat (yaitu dari ujung kantong hingga ujung sayap/wing).
Seine net: record the length of the bag section and total length of the seine, i.e. distance from the tip of the bag to the tip of the wing.

Jenis pukat cincin (purse-seine): catat panjang (meter) dan dalam jaring (meter);
Purse-seine: record length and depth of the net.

Jenis pancing: Tanyakan apakah jenis hand-line, pole & line, long-line, atau layang-layang. Catat ukuran panjang tali dan jenis/jumlah mata-kailnya.
Hook & line: ask the type of hook & line, i.e., hand-line, pole & line, long-line or kite.

Jenis perangkap: Catat nama lokal, bentuknya (gambar!), dan ukuran panjang (meter), lebar (meter) dan tinggi (meter).
Fish traps: record its local name, the shape (draw it) and dimension (length, width and depth).

Jenis sero: Catat jenisnya (misalnya, sero nyare dan sero tanam) dan ukurannya (panjang dan lebar sero).
Weir: record its type (eg. sero nyare dan sero tanam) and its size (length and width).

Jenis bagan: Catat jenisnya (bagan tancap, bagan perahu). Jika bagan mereka gunakan dibangun dengan bentuk dan ukuran yang seragam tentukan bentuk dan ukurannya sebelum survei dilakukan.
Liftnet: record its type (fixed bagan tancap, mobile bagan perahu). If all use bagan of similar construction and size, the description of this gear can be obtained before the survey.

Catat 3 (tiga) jenis/species ikan terpenting yang tertangkap oleh masing-masing alat yang digunakan. Sertakan juga nama lokal untuk ikan-ikan yang tersebut.

Don't forget to record the three most important species caught by type of gear they use. Record their local names, too.

Kegiatan penangkapan nener bandeng (nomor 4) ***Milkfish fry collection***

Catat berapa jumlah sere yang dipakai oleh rumah-tangga dan berapa buah yang dimilikinya. Hal terakhir perlu diketahui karena ada kemungkinan bahwa mereka hanya mengoperasikan alat yang dipinjamkan atau milik orang lain. Catat siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing.

Record how many gears are used by the household and how many of them are owned by the household member. It is possible that they operate gear that is loaned by someone with whom they may have an agreement on selling the fry. Record who is involved in the fry collection and what is their responsibility.

Kegiatan budidaya rumput laut (nomor 5) ***Seaweed farming***

Catat ukuran luas area laut yang dipakai untuk budidaya rumput laut dengan menanyakan ukuran panjang dan lebarnya. Tanyakan berapa banyak tali ris yang digunakan untuk menggantungkan rumput laut dan berapa panjang masing-masing tali ris (meter). Catat siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing.

Record the size of area used for seaweed farming by asking its length and the width, how many lines used to hang the seaweed and length of each line. Record who is involved in the seaweed farming and what is their responsibility.

Kegiatan mengumpulkan hasil laut dengan tangan/alat yang sederhana (nomor 6) ***Gleaning of marine biotas***

Catat jenis alat yang digunakan dan tanyakan 5 (lima) jenis hasil laut yang terbanyak diperoleh dari kegiatan ini. Catat siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing.

Record what gear they use and list the 5 (five) most important biota collected. Record who is involved in the gleaning and what their responsibility is.

Kegiatan beli-jual komoditi (nomor 7) ***Trading activity***

Bagian ini mencatat kegiatan beli-jual, yaitu dimana anggota keluarga menerima/membeli dari orang lain kemudian menjualnya kepada orang lain. Nelayan yang menangkap ikan lalu menjualnya kepada orang lain tidak dikatakan melakukan kegiatan beli-jual karena dia tidak melakukan pembelian ikan, tetapi hanya menangkap ikan.

This section records trading activity, i.e. when household members receive/buy from someone and then sell to someone. Fishermen who catch fish and sell the fish to someone are not considered involved in trading activity. Their activity is only catching fish.

Catat jenis komoditi diperdagangkan, misalnya ikan segar, ikan asap, nener bandeng, rumput laut, ikan hias, kelapa, kopra, kayu bakar ataupun kebutuhan rumah-tangga sehari-hari dan lain-lain apa saja

yang diperdagangkan. Catat siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing. Berapa jumlah penjual komoditi kepada rumah-tangga responden yang diwawancarai dan bagaimana hubungan mereka. Hubungan pembelian ini dapat karena (a) responden adalah pemilik alat produksi, (b) responden membiayai proses produksi, (c) pembayaran hutang, (d) hubungan keluarga, dan lain-lainnya (sebutkan). Dimana barang kemudian dijual dan apa hubungan antara responden dengan pembelinya.

Record everything that is being traded, e.g., fresh fish, smoked fish, milkfish fry, seaweed, ornamental fish, kopra, firewood or other groceries, etc. Record who is involved in the fry collection and their responsibility/role. Ask how many sellers and what is the relationship between the sellers and the household members. Their relationship can be (1) the household is gear provider, (2) the household finances the operation, (3) the household provides personal loan, (4) family relationship, (5) purely trading (6) etc. Where or to whom does the household sell the product and what is the relationship between them?

Kegiatan pengolahan komoditi (nomor 8) ***Processing***

Bagian ini mencatat kegiatan pengolahan (*processing*) komoditi, baik bahan mentah maupun setengah mentah, dimana anggota keluarga mengubah kualitas komoditi menjadi jenis komoditi baru. Jenis komoditi yang diolah dan hasilnya dapat berupa ikan asap, agar-agar, kopra, tepung. Catat alat yang digunakan dan siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing.

This section records processing, either raw material or half processed, in which household members change the quality of a product. The product can be in the form of smoked fish, agar-agar, kopra or flour. Record all equipment used, household members involved in the processing activity and their role/responsibility.

Kegiatan pertanian/bercocok tanam (nomor 9) ***Farming activities***

Bagian ini mencatat kegiatan pertanian/bercocok tanam di lahan daratan, seperti kebun, ladang, tanah rawa di lingkungan hutan bakau. Catat jenis komoditi yang ditanam, berapa luas lahan untuk masing-masing komoditi atau total luas lahan. Tanyakan status pemilikan lahan. Tanyakan siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing.

This section records agricultural activities on land, e.g., garden, farmland, swamp in mangrove areas. Record type of plants they grow, the size of the area used for farming or total area of the farmland. Record the ownership of the land. Who are involved in the farming activity and their role/responsibility.

Kegiatan produktif lainnya (nomor 10) ***Other productive activities***

Bagian ini mencatat kegiatan produktif lain yang tidak tercantum dalam kegiatan nomor 3 hingga nomor 9. Dalam bagian ini kegiatan produktif yang langsung memanfaatkan sumberdaya laut dan pesisir harus dicatat. Misalnya kegiatan penangkapan ikan hias, pengumpulan kayu bakau, peternakan mutiara, pertambakan udang, pertambakan ikan, pengumpulan batu karang dan lain-lain. Jenis keterangan yang diperlukan untuk setiap kegiatan ini pada prinsipnya adalah sama, yaitu apa nama kegiatannya, apa peralatan yang digunakan, siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing. Untuk kegiatan produktif lain yang berkaitan dengan penyediaan jasa, hal yang perlu dicatat adalah jenis pekerjaan/jasa, peralatan yang digunakan, pemilikan peralatan, siapa anggota keluarga yang bekerja/terlibat dan apa peranannya masing-masing.

This section records productive activities other than those mentioned in questions number 3 through 9. In this section any productive activity must be recorded. For example, collection of ornamental fish, collection of fire woods from mangrove area, pearl farming, prawn farming, fish farming, coral

mining etc. Details of information required to describe this activity category are basically similar, i.e., type of activity, equipment/tools, who are involved and what is their responsibility. Other productive activities that offer service should also be recorded; type of service, tools/equipment, ownership of the tools/equipment, household members involved and their roles/responsibility.

Keterangan kegiatan penangkapan ikan hias, yaitu jumlah dan jenis alat tangkap dan pemilikan alat serta 3 (tiga) jenis ikan yang banyak tertangkap dapat dijelaskan dalam kolom-kolom jawaban untuk pertanyaan nomor 3. Namun jangan lupa mencatat kegiatan penangkapan ikan hias dalam jawaban nomor 10 ini dan mendaftarkannya dalam jawaban nomor 11 berikut.

Regarding the collection of ornamental fish, details of information required are similar to that of catching fish (question no. 3). Please don't forget to ask the 3 (three) most important fish species/type collected. Also, don't forget to record the collection of ornamental fish in answering question no.10 and register it in the following question
no. 11

Khusus untuk bagian ini, kegiatan produktif lain ini diurutkan berdasarkan kepentingannya terhadap pendapatan rumah-tangga. Nomor satu adalah kegiatan yang paling terpenting.

The other productive activities listed in this section are then ranked with regard to the degree of importance/contribution to the income of the household. Rank no. 1 is the most important activity.

Daftar kegiatan produktif (nomor 11) ***List of productive activities***

Setelah memperoleh jawaban-jawaban untuk setiap nomor pertanyaan, anda harus mendaftar setiap kegiatan produktif yang dilakukan oleh rumah-tangga responden. Berikut adalah contoh daftar kegiatan-kegiatan produktif suatu rumah tangga:
Tangkap ikan, tangkap nener, kumpul hasil laut dengan tangan/alat sederhana, budidaya rumput laut, beli-jual ikan, beli jual nener bandeng, beli-jual rumput laut, beli jual kopera, beli jual ikan hias dll. (sebutkan!), pengolahan ikan, pengolahan kelapa, pertanian kopera dll. (sebutkan!), tukang kayu, kiriman uang dll. (sebutkan!).

After you get all the answers, you must list of all the productivity activities performed by the household. Here is an example of activities listed:
Fishing, milkfish fry collection, seaweed farming, trading fish, trading milkfish fry, trading seaweed, trading kopra, trading ornamental fish and others (list them), fish processing, kopra processing, coconut farming, carpenter, money received from overseas and others (list them).

Tingkatan kegiatan produktif (nomor 12) ***Rank of productive activities***

Kegiatan-kegiatan yang terdaftar dalam daftar kegiatan produktif (nomor 11) harus diurutkan menurut kepentingannya/sumbangannya terhadap pendapatan rumah-tangga. Nomor 1 (satu) adalah kegiatan yang paling penting, yaitu yang paling besar sumbangannya. Semua kegiatan yang dilakukan tersebut harus diurutkan. Jangan sampai ada yang terlewat!!

Untuk mendapat informasi tentang persentasi kontribusi, tanyakan kepada responden berapa persen kontribusi untuk setiap kegiatan produktif yang telah dirangking di atas. Setelah menanyakan rangking yang penting dari semua kegiatan, kembali ke rangking pertama kegiatan dan tanyakan persentasi pendapatan dari kegiatan tersebut, kemudian tanyakan presentasi untuk kegiatan produktive rangking kedua, dan seterusnya. Persentasi adalah suatu konsep yang abstrak dan mungkin sulit untuk dijawab oleh masyarakat, terutama untuk kegiatan yang memiliki porsi kecil dari pendapatan atau kegiatan sampingan dimana tidak ada pendapatan uang yang diperoleh, tetapi masih memberikan konsrtibusi produksi kepada rumah tangga.

All productive activities listed in question no. 11, must be ranked according to their importance/contribution to the income of the household. Ranked no. 1 is the most important activity. All of the activities must be ranked. Don't miss any of them!

To gather information about the percent contribution, ask the interviewees (or respondent) the percentage contribution for each of the productive activities ranked above. After asking the rank of importance for all activities, go back to the first activity ranked and ask the percentage of income from that activity, then ask the percentage for the second most productive activity, etc. Percentage is an abstract concept and it may be difficult for people to answer, particularly for activities that represent a small portion of income or subsistence activities where no income of money is derived, but which still represent a productive contribution to the household.

BAGIAN KEDUA: KONDISI RUMAH DAN GAYA HIDUP
SECTION 2: HOUSE CONDITION AND LIFE STYLE

Gunakan logika dalam mencatat jenis-jenis bahan yang dipakai atau peralatan yang digunakan rumah tangga. Anda tidak perlu menanyakan semuanya karena anda dapat mengamatinya (misalnya, kondisi dinding, jendela, lantai, dll. Jangan membuang waktu menanyakan hal-hal yang sudah bisa diamati.

Use common sense when you record building/house materials and house equipment. You do not necessarily ask the respondent because you can observe them directly, such as wall condition, window and floor, etc.). Don't waste your time by asking something that you can observe.

Penggunaan tanah dan status tanah yang dimiliki (nomor 14) ***Land use and type of ownership***

Untuk memperoleh informasi mengenai status kepemilikan dan penggunaan tanah, pertama tanyakan apakah mereka punya atau menggunakan tanah untuk kegiatan sebagaimana terdaftar dalam pertanyaan nomor 14. Jika mereka menjawab Ya, kemudian diteruskan dengan pertanyaan bagaimana tipe kepemilikan yang mereka punyai.

To obtain information concerning the ownership status of land and its use, first ask whether they have or use land for the activities listed in question 14. If they answer yes, then proceed to the following question as to what type of "ownership" they have.

BAGIAN KETIGA: PERTANYAAN SIKAP
SECTION 3: ATTITUDE

Kita perlu mengetahui pandangan/sikap wanita dan pria terhadap pemanfaatan dan sifat-sifat sumberdaya alam yang tersedia di kawasan pesisir. Dengan demikian, seorang lelaki dewasa dan seorang wanita dewasa kita minta untuk menjawab sejumlah pertanyaan. Wawancara ini harus dilakukan dalam suasana dimana tidak ada orang lain yang dapat mempengaruhi wawancara. Hal ini berarti lelaki dan perempuan perlu diwawancarai secara terpisah, jika keadaan memungkinkan. Anda disarankan untuk menghindarkan wawancara dalam suasana orang berkerumun karena banyak diantara mereka dapat memberikan respon terhadap pertanyaan. Tujuan kita adalah mengetahui pandangan/sikap perorangan, bukan sikap kelompok.

We need to know perceptions of males and females on the use and characteristics of natural coastal resources. Therefore, we need an adult male and adult female for the interview. The interview must be carried out in an environment where no one will affect the process of interviewing. This means that the male and the female must be interviewed separately when possible. You are not encouraged to interview a respondent in a crowd because they may make any response to the questions. Our goal is to discover individual perceptions or attitudes, not group.

Enam pertanyaan pertama bagian sikap ini memerlukan perhatian khusus karena kita ingin mengetahui alasan pernyataan yang dibuat oleh responden secara lebih rinci. Alasan bahwa responden merasa bahwa 'keadaan ekonomi sekarang lebih baik dari lima tahun lalu' harus digali sebanyak mungkin. Alasan pendek seperti 'fasilitas umum lebih baik' atau 'membantu masyarakat' atau 'merugikan' tidak cukup untuk menjelaskan perasaan tersebut. Usahakan untuk mendapatkan jawaban yang lebih jelas dan khusus, dimana tergambar faktor dan proses yang menyebabkan ia membuat kesimpulan perasaannya tersebut (soal nomor 15.1 dan 15.6). Hal yang sama harus juga dilakukan dalam menanyakan masalah besar yang dihadapi keluarganya (soal nomor 15.5). Misalnya, jawaban pendek seperti 'penghasilan menurun' harus dijelaskan apa yang menyebabkan menurun dan bagaimana prosesnya.

The first six attitude questions need special attention because we need to know more detailed reasons on statements made by the respondent. When the respondent feels that the economic status of the household is better now than five years ago, the reason must be explored. Reasons expressed in short sentences such as 'improved public facilities', 'being helpful to community' or 'disadvantageous' do not sufficiently explain such reasons. Try to discover answers which describe the factor and process by which the respondent formed her/his opinion (question no. 15.1 and 15.6). The same effort must be made in order to discover the problems faced by the household (question no. 15.5). For example, a short reason of 'decreased income' must be explained by asking what made the income drop or how did it happen.

Untuk pertanyaan yang memerlukan jawaban setuju dan tidak setuju, sebelum menanyakan pertanyaan sikap, anda perlu mengatakan : "Saya akan membacakan sejumlah pernyataan. Untuk setiap pernyataan yang saya baca, saya ingin mengetahui apakah Bapak/Ibu setuju dengan pernyataan itu". Jika setelah satu pernyataan dibacakan, tanyakan apakah dia setuju atau tidak setuju atau netral dengan pernyataan tersebut. Jika Ia mengatakan setuju, tanyakan apakah ia sangat setuju, setuju atau agak setuju . Jika mereka mengatakan tidak setuju, tanyakan apakah ia sangat tidak setuju, hanya tidak setuju saja atau agak tidak setuju. Jawaban yang diberikan oleh responden harap dicatat dengan melingkari huruf yang sesuai.

With respect to the set of attitude questions that respondent is asked to agree or disagree with, you should introduce the set by saying : "I am going to read you a list of statements. For each statement I read, I want to know if you agree nor disagree with the statements." After reading a statement, ask if the respondent agrees or disagrees or neither (neutral). If they say agree, ask if they agree strongly, agree, or just agree slightly. If they say disagree, ask if they disagree strongly, simply disagree, or only disagree a little.

TERAKHIR, tanyakan apakah ia menjadi anggota suatu organisasi atau serikat. Jika ia menjawab ya, tanyakan nama organisasi tersebut dan apa tujuan organisasi tersebut. Tanyakan pendidikan terakhir yang dialaminya. Jika pendidikan formal yang diikuti tidak selesai, tanyakan sampai kelas berapa. Pertanyaan tentang umur, jenis kelamin, suku dan agama sudah jelas. Periksa formulir, pastikan semua pertanyaan terjawab sebelum diserahkan kepada pengolah/pengkode data.

***FINALLY**, ask if he/she a member of an organization or union. If they say yes, ask what is the name of the organization and what is its objective. Ask if they had any formal education and for how long or the degree they achieved. Their age, sex, ethnicity and religion must also be recorded. Check the form, make sure you have <u>all</u> the questions answered before submitting to the data processor/coder.*

Selamat melakukan wawancara!
Have a nice day!